

N00207.AR.003657
NAS JACKSONVILLE
5090.3a

FINAL ENGINEERING EVALUATION/COST ANALYSIS FOR POTENTIAL SOURCE OF
CONTAMINATION 45 NAS JACKSONVILLE FL

10/1/2013
TETRA TECH

Comprehensive **L**ong-term **E**nvironmental **A**ction **N**avy

CONTRACT NUMBER N62467-04-D-0055



Rev. 1
10/01/13

Engineering Evaluation/Cost Analysis for Potential Source of Contamination 45

**Naval Air Station Jacksonville
Jacksonville, Florida**

Contract Task Order 0112

October 2013



**NAS Jacksonville
Jacksonville, Florida 32212-0030**

**ENGINEERING EVALUATION/COST ANALYSIS
FOR
POTENTIAL SOURCE OF CONTAMINATION 45**

**NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:
Naval Facilities Engineering Command
Southeast
NAS Jacksonville
Jacksonville, Florida 32212-0030**

**Submitted by:
Tetra Tech
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220**

**CONTRACT NUMBER N62467-04-D-0055
CONTRACT TASK ORDER 0112**

OCTOBER 2013

PREPARED UNDER THE SUPERVISION OF:



**MARK A. PETERSON, P.G.
TASK ORDER MANAGER
TETRA TECH
JACKSONVILLE, FLORIDA**

APPROVED FOR SUBMITTAL BY:



**DEBRA M. HUMBERT
PROGRAM MANAGER
TETRA TECH
PITTSBURGH, PENNSYLVANIA**



The professional opinions rendered in this decision document identified as the *Engineering Evaluation and Cost Analysis for Potential Source of Contamination 45 at Naval Air Station Jacksonville, Jacksonville, Florida*, dated August 21, 2013, were developed in accordance with commonly accepted procedures consistent with applicable standards of practice. This document was prepared under the supervision of the signing engineer and is based in part on information obtained from others. If conditions are determined to exist differently than those described in this document, then the undersigned professional engineer should be notified to evaluate the effects of any additional information on the project described in this document.


October 1, 2013

Benedict Marshall, P.E.
Professional Engineering Number 67735
Tetra Tech Engineering Number 2429

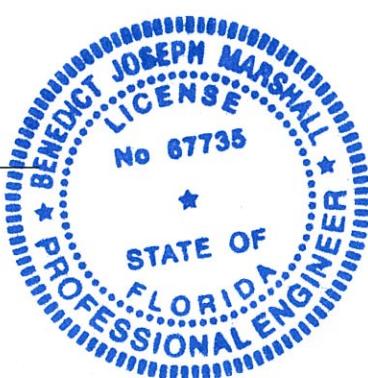


TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
PROFESSIONAL CERTIFICATION	iii
ACRONYMS	vii
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION.....	1-1
2.0 SITE CHARACTERIZATION	2-1
2.1 SITE DESCRIPTION AND BACKGROUND	2-1
2.1.1 Location and Description	2-1
2.1.2 NAS Jacksonville History	2-1
2.1.3 PSC 45 Location and Description	2-4
2.1.4 PSC 45 History.....	2-4
2.1.5 Site Geology and Hydrogeology	2-6
2.2 INITIAL WASTE CHARACTERIZATION	2-7
2.3 INITIAL SITE INVESTIGATION	2-7
2.4 NATURE AND EXTENT OF CONTAMINATION	2-8
2.4.1 Sources of Contamination.....	2-8
2.4.2 Phase I – Groundwater Sample Results.....	2-8
2.4.3 Phase II – Soil Sample Results.....	2-14
2.4.4 Phase II – Groundwater Sample Results.....	2-18
2.4.5 Risk Evaluation/Determination of Cleanup Concentration.....	2-26
3.0 IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES.....	3-1
3.1 REMEDIAL ACTION OBJECTIVES.....	3-1
3.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) CRITERIA	3-1
3.2.1 Chemical-Specific ARARs and TBCs	3-1
3.2.2 Location-specific ARARs and TBCs	3-2
3.2.3 Action-Specific ARARs and TBCs	3-2
3.3 MEDIA OF CONCERN.....	3-2
3.4 CHEMICALS OF CONCERN FOR REMEDIATION	3-2
3.5 PRELIMINARY REMEDIATION GOALS	3-2
3.6 GRAS AND ACTION-SPECIFIC ARARS	3-7
3.6.1 General Response Actions	3-7
3.6.2 Action-Specific ARARs	3-7
3.7 ESTIMATED VALUES OF CONTAMINATED MEDIA.....	3-13
4.0 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES	4-1
4.1 ALTERNATIVE 1: NO ACTION	4-1
4.1.1 Effectiveness.....	4-1
4.1.2 Implementability	4-5
4.1.3 Cost.....	4-5
4.2 ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING	4-5
4.2.1 Effectiveness.....	4-6
4.2.2 Implementability	4-7
4.2.3 Cost.....	4-8
4.3 ALTERNATIVE 3 EXCAVATION TO BELOW RESIDENTIAL CLEANUP CRITERIA AND OFF-BASE TREATMENT AND DISPOSAL.....	4-8
4.3.1 Effectiveness.....	4-10
4.3.2 Implementability	4-11
4.3.3 Cost.....	4-12

5.0	COMPARATIVE ANALYSIS OF REMEDIAL ACTION ALTERNATIVES.....	5-1
5.1	COMPARISON OF SOIL REMEDIAL ALTERNATIVES BY CRITERIA.....	5-1
5.1.1	Overall Protection of Health and Environment.....	5-1
5.1.2	Compliance with ARARs and TBCs.....	5-1
5.1.3	Long-term Effectiveness and Permanence.....	5-2
5.1.4	Reduction of Toxicity, Mobility, or Volume through Treatment.....	5-2
5.1.5	Short-term Effectiveness.....	5-3
5.1.6	Implementability	5-3
5.1.7	Cost.....	5-4
5.2	SUMMARY OF COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES	5-4
6.0	RECOMMENDED REMEDIAL ACTION ALTERNATIVE.....	6-1
	REFERENCES.....	R-1

APPENDICES

A	ANALYTICAL LABORATORY RESULTS
B	COST ESTIMATE

TABLES

NUMBER		PAGE
2-1	Summary of Detections from Phase I Groundwater Analytical Results.....	2-9
2-2	Summary of Detections from Phase II Soil Analytical Results.....	2-15
2-3	Summary of Detections from Phase II Groundwater Analytical Results.....	2-19
3-1	Federal Chemical-Specific ARARs	3-3
3-2	State Chemical-Specific ARARs	3-4
3-3	Federal Location-Specific ARARs.....	3-5
3-4	Federal Action-Specific ARARs	3-8
3-5	State Action-Specific ARARs	3-11
4-1	Preliminary Screening of Soil Remediation Technologies and Process Options	4-2
5-1	Comparative Analysis of Remedial Action Alternatives	5-5

FIGURES

NUMBER		PAGE
2-1	Facility Location Map	2-2
2-2	PSC 45 Site Location Map	2-3
2-3	Site Map	2-5
2-4	Phase I Groundwater Sample Results Detections Above PSLs.....	2-12
2-5	Phase II Soil Sample Results Detections Above PSLs.....	2-17
2-6	Phase II Groundwater Sample Results Detections Above PSLs.....	2-25
4-1	Alternative 3 – Soil to be Excavated	4-9

ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
BAP	benzo(a)pyrene
BAPeq	benzo(a)pyrene equivalent
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	constituent of concern
cPAH	carcinogenic PAH
CSF	cancer slope factor
CTO	contract task order
EE/CA	Engineering Evaluation and Cost Analysis
ERA	Ecological Risk Assessment
ESV	Ecological Screening Value
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
ft ²	square feet
GCTL	Groundwater Cleanup Target Level
GRA	General Response Action
HI	hazard index
LTTD	low-temperature thermal desorption
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
µg/kg	microgram per kilogram
µg/L	microgram per liter
MCL	maximum contaminant level
mg/kg	milligram per kilogram
mg/L	milligram per liter
NAS	Naval Air Station
NAT	Navy Aviation Trade
NCP	National Contingency Plan
NPW	Net Present Worth
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAH	polynuclear aromatic hydrocarbon

ACRONYMS AND ABBREVIATIONS (CONTINUED)

PAL	project action limit
Partnering Team	NAS Jacksonville Installation Restoration Partnering Team
PCB	polychlorinated biphenyl
PPE	personal protective equipment
PRG	Preliminary Remediation Goal
PSC	Potential Source of Contamination
PSL	project screening limit
RAO	removal action objective
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RI	remedial investigation
SCTL	Soil Cleanup Target Level
SI	site investigation
SVOC	semivolatile organic compound
SDWA	Safe Drinking Water Act
SWMU	Solid Waste Management Unit
TBC	To Be Considered
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbon
TSDF	treatment, storage, and disposal facility
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
yd ³	cubic yard

EXECUTIVE SUMMARY

This Engineering Evaluation/Cost Analysis (EE/CA) for Potential Source of Contamination (PSC) 45 at Naval Air Station (NAS) Jacksonville located in Jacksonville, Duval County, Florida, has been prepared to comply with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements for a non-time-critical removal action, as identified in Section 300.415(b)(4)(I) of the National Oil and Hazardous Substance Pollution Contingency Plan. The goal of this EE/CA is to identify remedial action objectives (RAOs); develop remedial alternatives to achieve these RAOs; and then evaluate the alternatives with regards to cost, effectiveness, and implementability in order to select the most appropriate alternative.

E.1 SITE DESCRIPTION AND HISTORY

PSC 45, the former Building 200 Wash Rack Disposal Pit, is located on NAS Jacksonville. Building 200 is a ground support equipment facility and is located on the northern industrialized portion of NAS Jacksonville near the flight line. A covered wash rack with a floor drain leading to an oil/water separator (located beneath wash rack) was located in a small room (the Wash Rack Room) attached to the northwestern corner of the Building 200. An overflow pipe from the oil/water separator was connected to a cylindrical concrete disposal pit located approximately 20 feet east of the Wash Rack Room. The pit was a French drain design that leached directly into the subsurface soil. The pit was gravel filled with an earthen bottom and a concrete lid approximately 4 feet in diameter. A small grassy area surrounded the former disposal pit, and a paved parking lot is located north of this grassy area. The Building 200 Wash Rack Disposal Pit was identified as PSC 45 by NAS Jacksonville personnel in 1991.

In the past, ground support equipment was cleaned in the wash rack. While in the wash rack, solvents were used to strip paint off the equipment. For an unknown period of time (up to 1991), the disposal pit received overflow from an oil/water separator located beneath the wash rack.

According to a Hazardous Waste Manager for Building 200, no maintenance was ever done on the oil/water separator (Tetra Tech, 2004). In 1991, during plumbing repair work at Building 200, a connection from the wash rack to the disposal pit was discovered. After the connection was discovered, the connection from the oil/water separator to the pit was plugged, and waste from the pit was removed and disposed of as hazardous waste.

A new oil/water separator was installed within the pit excavation area. The old oil/water separator is still operational in the Wash Rack Room; however, to further safeguard against the accidental release of oil and solvents, effluent from the old separator is directed through plumbing to the new separator before going directly to the sanitary sewer.

E.2 SUMMARY OF PREVIOUS INVESTIGATIONS

A liquid sample was collected from the disposal pit in July 1991, probably before waste was removed from the pit. The gross components of the sample were identified as water, paint chips, paint stripper, and oil. A methylene chloride concentration of 1,800 milligrams per liter (mg/L) and a phenol concentration of 285 mg/L were measured in the sample. In 1994, a sludge sample was collected from the disposal pit and analyzed for oil and grease only; the result was 7.8 mg/L. In 1998, the Wash Rack Disposal Pit, the liquid and solids within the pit, and the soil surrounding and underlying the pit were removed. Pre-disposal samples collected from the soil, liquid, and solids were analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) for waste characterization, and analyte concentrations were less than the applicable TCLP regulatory limits. No documentation of post-excavation sampling around the former pit has been found (Tetra Tech, 2004).

In August 2009, as part of the site investigation (SI) for PSC 45, Tetra Tech collected eight soil samples from four soil borings in the area of the former disposal pit (Tetra Tech, 2011b). Four groundwater samples were collected from one of the borings associated with the soil samples. Forty-four additional groundwater samples were collected from 11 borings advanced using direct push technology along the eastern, northern, and western sides of Building 200. Groundwater samples from a total of 11 locations were collected from the following four depth intervals: 12 to 16, 20 to 24, 40 to 44, and 60 to 64 feet below ground surface (bgs). The soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (including low level polynuclear aromatic hydrocarbons [PAHs]), polychlorinated biphenyls, total recoverable petroleum hydrocarbons, and metals. Groundwater samples were analyzed for VOCs using a mobile laboratory.

The results of the SI confirmed that analyte concentrations in excess of the SI-specific project action limits (PALs) were present in soil and groundwater. During the review of the SI data, the NAS Jacksonville Installation Restoration Partnering Team agreed the SI-specific PALs would be the remedial investigation-specific project screening levels. A few VOCs were present in soil at concentrations greater than the SI PALs; however, PAHs appeared to be the primary human health risk driver in soil as a number of these compounds were detected at concentrations exceeding the Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Levels (SCTLs) associated with direct exposure by commercial/industrial land use.

During the SI, groundwater was analyzed using a mobile laboratory for a reduced set of target analytes. Fewer analytes were detected in groundwater in the vicinity of the former Wash Rack Disposal Pit than downgradient of the Wash Rack Disposal Pit. The concentrations of these analytes associated with the Wash Rack Disposal Pit were generally less than concentrations in groundwater from 300 to 500 feet downgradient of the former Wash Rack Disposal Pit. No analytes were detected above the SI-specific PALs in the 60 to 64 feet bgs depth interval from the wells installed adjacent the former Wash Rack

Disposal Pit. The majority of analytes detected in groundwater were VOCs that are not usually associated with oil or petroleum hydrocarbons. Most of the analytes were detected in groundwater collected downgradient of the former Wash Rack Disposal Pit. The greatest frequencies of detection were in the 20- to 24- and the 40- to 44-foot bgs depth intervals. No analytes were detected in excess of the site-specific PALs in the 60- to 64-foot bgs depth interval from the wells installed downgradient of the former Wash Rack Disposal Pit (Tetra Tech, 2011b).

E.3 SUMMARY OF RISK EVALUATION

Previous sampling identified several chemicals in the soil as a concern to human receptors. Soil analytical data were compared to the FDEP SCTLs for direct residential exposure and leachability to groundwater. Benzo(a)pyrene (BAP) and BAP equivalents (BAPeq) were detected in soil exceeding the FDEP SCTLs for direct residential exposure. These chemicals were therefore retained as constituents of concern (COCs). Cadmium was also detected at one location in soil at a concentration exceeding the FDEP SCTL for leachability to groundwater. BAPeq, BAP, and cadmium are considered as COCs.

E.4 REMEDIAL ACTION OBJECTIVES AND PRELIMINARY REMEDIAL ACTION GOALS

To protect the public from potential current and future health risks, as well as to protect the environment, the following RAOs have been developed:

- Prevent unacceptable risk from exposure to soil with concentrations of BAPeq and cadmium in excess of the FDEP residential SCTLs.
- Address the potential risk of transfer of organic and inorganic contamination from soil to groundwater from soil with concentrations that exceed the FDEP SCTLs for leachability.

A Preliminary Remediation Goal (PRG) is the target concentration to which a COC must be reduced within a particular medium of concern to achieve one or more of the established RAOs. PRGs are developed to ensure that contaminant concentration levels left on site are protective of human and ecological receptors.

For PSC 45, soil PRGs were established based on the following criteria:

- Protection of human health from direct exposure to contaminated soil.
- Compliance with Applicable or Relevant and Appropriate Requirements (ARAR) and To Be Considered (TBC) criteria to the extent practicable.

E.5 DEVELOPMENT OF REMEDIAL ACTION ALTERNATIVES

Based on the RAOs and PRGs, the following alternatives for soil remediation have been developed for the Building 200 Wash Rack:

- **Alternative 1: No Action.** This alternative is a "walk-away" alternative that is required under CERCLA to establish a basis for comparison with other alternatives. Under this alternative the property would be released for unrestricted use. This alternative cannot be chosen for the Building 200 Wash Rack because waste would remain on site without any use restrictions.
- **Alternative 2: Institutional Controls and Monitoring.** Institutional controls would consist of limiting land use to industrial purposes. A Land Use Control (LUC) Implementation Plan (LUCIP) would be prepared and implemented to ensure that, prior to any development at PSC 45, adequate measures would be taken to minimize adverse human health and environmental effects. In particular, LUCs would prevent residential development of PSC 45. Regular site inspections would be performed to verify the continued implementation of the LUCIP.

Monitoring would consist of regularly checking COCs concentrations by collecting soil samples in the areas of highest recorded contamination based on previously collected data. These samples would then be analyzed for PAHs and cadmium. Monitoring would also consist of collecting groundwater samples from existing and proposed wells in the contaminated soil and downgradient area and analyzing these samples for metals, PAHs, and VOCs.

Monitoring would be conducted for 30 years, and the data would be evaluated to determine the need for additional remedial action at the site. Every 5 years, site reviews, including evaluation of sampling data, would be conducted to evaluate the continued adequacy of the remedial alternative.

- **Alternative 3: Excavation to Below Residential Cleanup Criteria and Off-Base Treatment and Disposal.** This alternative would allow unrestricted use of the site. Soil contaminated with concentrations of COCs exceeding the FDEP SCTLs for direct residential exposure or leachability to

groundwater would be excavated. Due to the proximity of buildings and the existing oil water separator, hand-digging to a depth of approximately 4 feet bgs would need to be the method for soil removal. Following excavation, the excavated areas would be backfilled with clean fill, graded, vegetated, and the site would be restored to pre-excavation conditions.

The excavated soil would be transported to an off-base permitted treatment, storage, and disposal facility (TSDF). The exact nature and extent of the treatment required prior to disposal would be determined by the TSDF based upon actual analysis of the contaminated soil and the requirements of their permit. It is assumed that soil with higher concentrations of BAPEq would be treated with low-temperature thermal desorption, while soil with higher concentrations of cadmium would be chemically fixated and solidified. A certain portion of the soil might require both treatments while another portion might not require any treatment prior to disposal.

The treated soil would then be disposed of. It is assumed that the treated soil would be non-hazardous and would be disposed of in a Resource Conservation and Recovery Act Subtitle D type landfill. Samples of the treated soil would be collected and analyzed to ensure that the soil complies with the TSDF landfill permit.

E.6 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

Overall protection of human health and the environment would not be met by Alternative 1, but both Alternatives 2 and 3 would be protective. Alternative 3 would be more protective because the risk would be removed rather than just restricted.

Alternative 1 would not achieve compliance with ARARs and TBCs. Alternative 2 would comply with location-specific and action-specific ARARs and TBCs, but not chemical-specific ARARs and TBCs. Alternative 3 would comply with all three types of ARARs and TBCs for COCs in the soil.

Long-term effectiveness and permanence cannot be determined under Alternative 1. Both Alternatives 2 and 3 would have long-term effectiveness and would be permanent solutions.

Alternatives 1 and 2 would not reduce contaminant toxicity, mobility, or volume. Alternative 3 would remove 2,627 cubic yards of contaminated soil, thereby permanently reducing the volume of contamination at PSC 45.

Alternative 1 would not result in any short-term risks to site workers, but it also would not be effective in the short term either. Alternative 2 would have a slight risk to site workers during field sampling efforts,

but RAOs would be achieved immediately. PRGs could eventually be achieved in the long term through natural attenuation. These risks, however, would be mitigated by appropriate health and safety procedures. Alternative 3 would result in a significant risk to site workers during excavation and disposal activities. The RAOs would be achieved immediately upon implementation, and the PRGs would be attained within 2 months.

Alternative 1 would be simple to implement because no action would occur. Alternative 2 is relatively easy to implement through administrative means, and resources, materials, and equipment are readily available for the monitoring efforts. Alternative 3 would be more difficult, although still possible to implement, because contaminated soil would have to be excavated and transported off site for treatment and disposal.

There is no cost for Alternative 1. Alternative 2 would have an initial cost of \$16,000, annual costs of \$1,000 to verify implementation of institutional controls, and costs every five years of \$15,000 for monitoring and reporting for a net present worth of \$58,000 over the projected 30 years. Alternative 3 would have total cost of \$130,000 with no long-term costs.

E.7 RECOMMENDED REMEDIAL ALTERNATIVE

It is not acceptable to select the No Action alternative; this alternative is used only for comparison. Alternatives 2 and 3 are both technically feasible and environmentally acceptable. Alternative 2 is less expensive, but Alternative 3 will permit unrestricted use of the site.

It is anticipated the area of PSC 45 will continue to have industrial use for the foreseeable future. Implementing Alternative 3 would maximize the likelihood the groundwater would clean up over time through natural attenuation processes. For this reason, Alternative 3, excavating contaminated soil exceeding residential cleanup criteria with off-base treatment and disposal is the recommended alternative for this removal action.

1.0 INTRODUCTION

This Engineering Evaluation/Cost Analysis (EE/CA) for Potential Source of Contamination (PSC) 45 at Naval Air Station (NAS) Jacksonville located in Jacksonville, Duval County, Florida, has been prepared by Tetra Tech for the United States Navy, Naval Facilities Engineering Command Southeast. The work was conducted under the Comprehensive Long-Term Environmental Action Navy Program, Contract Number N62467-04-D-0055, Contract Task Order (CTO) 0112.

This EE/CA is being prepared to comply with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements for a non-time-critical removal action, as identified in Section 300.415(b)(4)(I) of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). The goal of this EE/CA is to identify remedial action objectives (RAOs); develop remedial alternatives to achieve these RAOs; and then evaluate the alternatives with regards to cost, effectiveness, and implementability in order to select the most appropriate alternative.

Sampling and analysis was conducted to identify and delineate groundwater and soil contamination at PSC 45. While the nature of the contamination is known, the extent of contamination in soil and groundwater has not been fully delineated. These investigations identified concentrations of cadmium and polynuclear aromatic hydrocarbons (PAHs) in soil that exceeded the Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Levels (SCTLs) for leachability and for direct residential exposure to groundwater, respectively.

A review of the data indicates that soils in the source area are impacted by metals and PAH constituents exceeding project screening limits (PSLs). The levels and extent of soil impacts appear to be restricted to the immediate vicinity of the disposal pit area; however, full delineation was not achieved via the sampling effort, and some limited sampling may be required prior to preparation of the remedial design. It is likely that a limited soil removal would be successful in removing soil impacts and limiting the need for soil land use restrictions.

Groundwater in the immediate area of the source area is impacted by metals, PAH constituents, and volatile organic compounds (VOC) constituents, all at relatively low levels in comparison to PSLs. VOC constituents, however, were noted over a broader area, and it does not appear that soils remain as a source for continued leaching impacts by VOC constituents to groundwater. Sampling of areas to the northeast of the source area indicated the likely presence of another source of groundwater contamination that appears to be unrelated to PSC 45.

This EE/CA evaluates alternatives for leaving the soil contamination in place (no action alternative), for leaving the contamination in place and restricting future land use, and for removal of contaminated soil with unrestricted future site use.

2.0 SITE CHARACTERIZATION

2.1 SITE DESCRIPTION AND BACKGROUND

2.1.1 Location and Description

NAS Jacksonville occupies approximately 3,896 acres in southeastern Duval County, Florida and is located approximately 9 miles south of downtown Jacksonville. The facility is located on the St. Johns River approximately 24 miles upstream from its confluence with the Atlantic Ocean. The main portion of NAS Jacksonville is bordered to the north by the Timaquana Country Club, to the east and northeast by the St. Johns River, to the south by a residential area, and to the west by Highway 17 (Roosevelt Boulevard) with Westside Regional Park, commercial developments, and other NAS Jacksonville operations beyond. The location of NAS Jacksonville is presented on Figure 2-1. The location of PSC 45 on NAS Jacksonville is presented on Figure 2-2.

NAS Jacksonville is a multi-mission base hosting more than 100 tenant commands and employing more than 26,000 active duty and civilian personnel. The installation is home to the P-3C Orion long-range maritime surveillance aircraft, the SH-60F Seahawk helicopter, and the S-3B Viking jet aircraft. The Naval Aviation Depot located at NAS Jacksonville is the largest industrial employer in northeastern Florida and performs maintenance, repair, and overhaul of Navy aircraft.

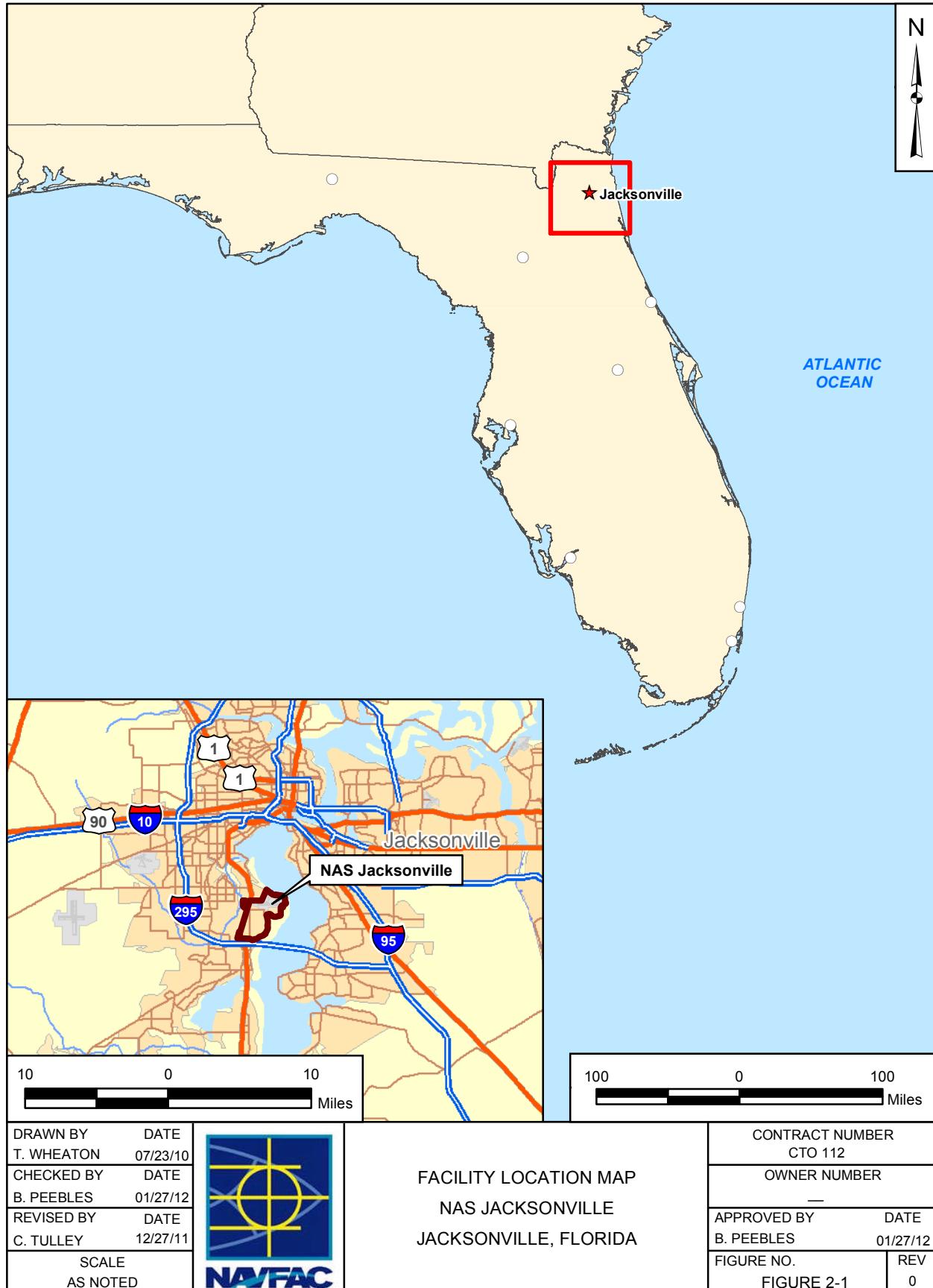
In addition to the many operational squadrons flying P-3, C-12, and C-9 aircraft and SH-60F helicopters, NAS Jacksonville is home to Patrol Squadron Thirty, the Navy's largest aviation squadron and the only "Orion" Fleet Replacement Squadron that prepares and trains United States and foreign pilots, air crew, and maintenance personnel for further operational assignments.

Support facilities include an airfield for pilot training, a maintenance depot employing more than 150 different trade skills capable of performing maintenance as basic as changing a tire to intricate micro-electronics or total engine disassembly, a Naval Hospital, a Fleet Industrial Supply Center, a Navy Family Service Center, and recreational facilities.

2.1.2 NAS Jacksonville History

NAS Jacksonville was commissioned on October 15, 1940, to provide facilities for pilot training and a Navy Aviation Trade (NAT) School for ground crewmen. With the advent of World War II, the physical size of the NAS Jacksonville more than doubled, and military functions supported the war effort.

PGH P:\GIS\JACKSONVILLE_NASIMXD\JAX_VICINITY_MAP.MXD 12/27/11 CJT



PGH P:\GIS\JACKSONVILLE_NAS\MXD\PSC_ALL_SITE_MAP_REV_122711.MXD 01/13/12 CJT



DRAWN BY C. TULLEY	DATE 12/27/11
CHECKED BY B. PEEBLES	DATE 12/10/10
REVISED BY S. STROZ	DATE 12/21/10
SCALE AS NOTED	



PSC 45 SITE LOCATION MAP
FACILITY-WIDE VIEW
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NUMBER CTO 112	
APPROVED BY _____ DATE _____	
APPROVED BY _____ DATE _____	
FIGURE NO. Figure 2-2	REV 0

During 1942, the Navy phased out pilot training, and the Station became the headquarters for the Chief of Naval Operational Training, the final training phase before fleet assignment. The NAT School became the Naval Air Technical Training Center under the Chief of Naval Air Technical Training, NAS Memphis. The operational areas of the Station still maintained coastal protection with seaplanes. The installation reached a peak of 42,000 Naval personnel and 11,000 civilians by 1946.

At the conclusion of World War II, NAS Jacksonville was devoted entirely to aviation training. In 1945, Chief of Naval Operational Training was re-designated Chief Naval Air Advanced Training. In July 1946, the Seventh Naval District was transferred from Miami, Florida to the NAS Jacksonville facility, as joint command with Chief Naval Air Advanced Training. On April 5, 1948, the Navy transferred the Chief Naval Air Training and all training facilities to NAS Corpus Christi, Texas.

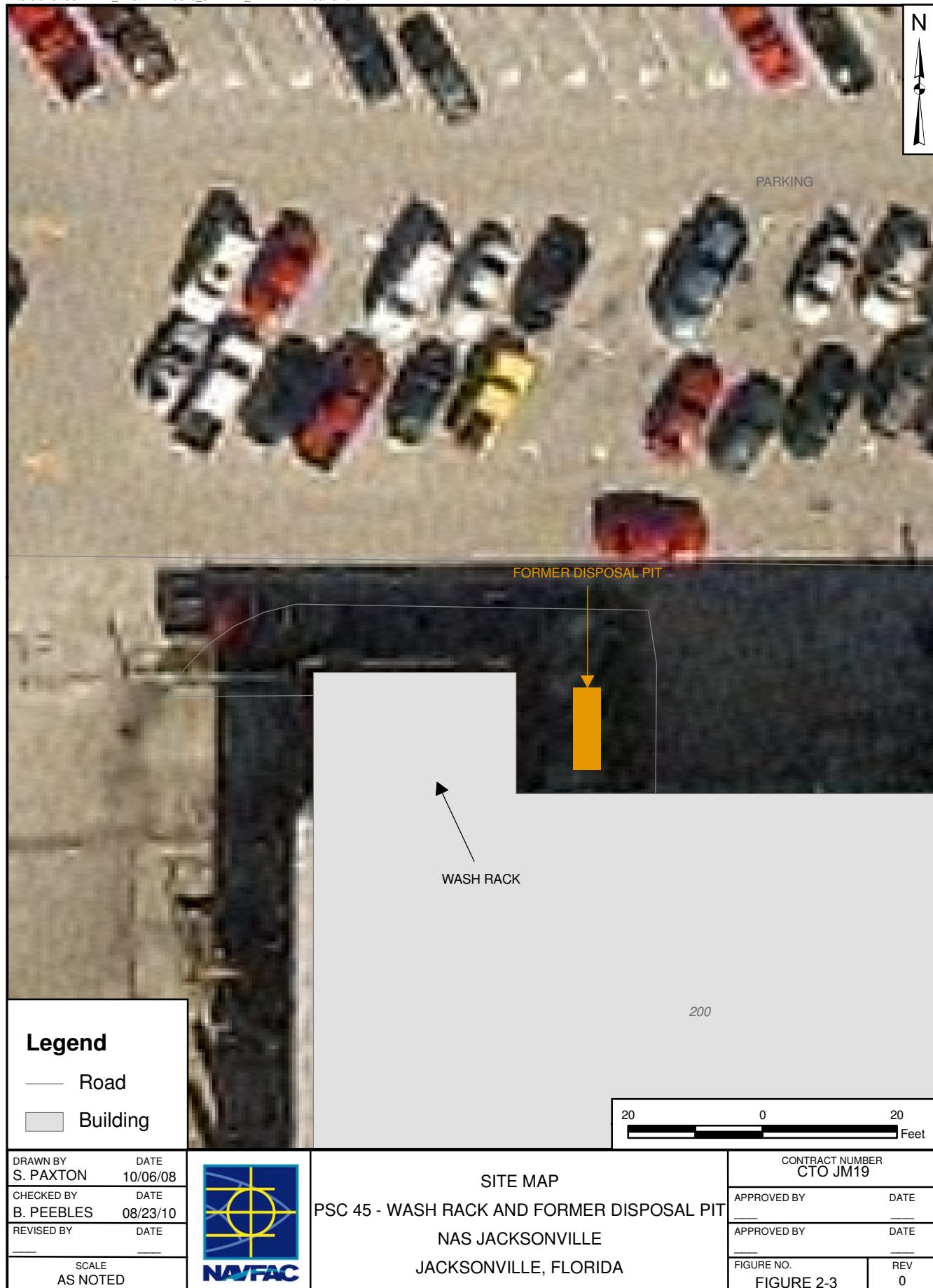
By January 1949, NAS Jacksonville's mission was to support the operational carrier squadrons with fleet squadrons assigned to Commander, Naval Air Bases, Sixth District, and patrol squadrons assigned to Combat Patrol Wing Eleven. On January 1, 1951, the Navy reactivated the Naval Air Technical Training Center and Marine Air Division activities in support of the Korean build-up of facilities. This joint operational and training status continues to this time.

2.1.3 PSC 45 Location and Description

PSC 45, the former Building 200 Wash Rack Disposal Pit, is located on the NAS Jacksonville facility (see Figure 2-2). Building 200 is a ground support equipment facility and is located on the northern industrialized portion of NAS Jacksonville near the flight line. A covered wash rack with a floor drain leading to an oil/water separator (located beneath wash rack) was located in a small room (the Wash Rack Room) attached to the northwestern corner of the Building 200 (see Figure 2-3). An overflow pipe from the oil/water separator was connected to a cylindrical concrete disposal pit located approximately 20 feet east of the Wash Rack Room. The pit was a French drain design that leached directly into the subsurface soil. The pit was gravel filled with an earthen bottom and a concrete lid approximately 4 feet in diameter. A small grassy area surrounded the former disposal pit, and a paved parking lot is located north of this grassy area. The Building 200 Wash Rack Disposal Pit was identified as PSC 45 by NAS Jacksonville personnel in 1991.

2.1.4 PSC 45 History

In the past, ground support equipment was cleaned in the wash rack. While in the wash rack, solvents were used to strip paint off the equipment. For an unknown period of time (up to 1991), the disposal pit received overflow from an oil/water separator located beneath the wash rack.



According to a Hazardous Waste Manager for Building 200, no maintenance was ever done on the oil/water separator (Tetra Tech, 2004). In 1991, during plumbing repair work at Building 200, a connection from the wash rack to the disposal pit was discovered. After the connection was discovered, the connection from the oil/water separator to the pit was plugged, and waste from the pit was removed and disposed of as hazardous waste.

A new oil/water separator was installed within the pit excavation area. The old oil/water separator is still operational in the Wash Rack Room; however, to further safeguard against the accidental release of oil and solvents, effluent from the old separator is directed through plumbing to the new separator before going directly to the sanitary sewer.

The following is a list of chronological events for activities performed at PSC 45:

- The disposal pit and connection were discovered in 1991 during pluming repair work at Building 200, and a liquid sample was collected from the disposal pit. The gross components of the sample were reported to be water, paint chips, paint stripper, and oil.
- In 1994, a sludge sample was collected from the disposal pit and analyzed for oil and grease only; the result was 7.8 milligrams per liter (mg/L).
- In 1998, the Wash Rack Disposal Pit, the liquid and solids within the pit, and the soil surrounding and underlying the pit were removed.

A site investigation (SI) was conducted at PSC 45 in 2009, as documented in the SI Report for PSC 45 (Tetra Tech, 2011b). Analytes were detected in soil and groundwater at concentrations exceeding the SI-specific project action limits (PALs).

2.1.5 Site Geology and Hydrogeology

PSC 45 is connected through underground structures (i.e., piping and an oil/water separator) to the Wash Rack Room, which is on the northwestern side of Building 200. This building is a ground support equipment facility and is located on the northern industrialized portion of NAS Jacksonville near the flight line. The geological and hydrogeological characteristics of the site are assumed to be similar to those described in the Remedial Investigation (RI) Report for PSC 45 (Tetra Tech, 2013).

2.2 INITIAL WASTE CHARACTERIZATION

A liquid sample was collected from the disposal pit in July 1991, probably before waste was removed from the pit. The gross components of the sample were identified as water, paint chips, paint stripper, and oil. A methylene chloride concentration of 1,800 mg/L and a phenol concentration of 285 mg/L were measured in the sample. In 1994, a sludge sample was collected from the disposal pit and analyzed for oil and grease only; the result was 7.8 mg/L. In 1998, the Wash Rack Disposal Pit, the liquid and solids within the pit, and the soil surrounding and underlying the pit were removed. Pre-disposal samples collected from the soil, liquid, and solids were analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) for waste characterization, and analyte concentrations were less than the applicable TCLP regulatory limits. No documentation of post-excavation sampling around the former pit has been found (Tetra Tech, 2004).

2.3 INITIAL SITE INVESTIGATION

In August 2009, as part of the SI for PSC 45, Tetra Tech collected eight soil samples from four soil borings in the area of the former disposal pit (Tetra Tech, 2011b). Four groundwater samples were collected from one of the borings associated with the soil samples. Forty-four additional groundwater samples were collected from 11 borings advanced using direct push technology along the eastern, northern, and western sides of Building 200. Groundwater samples from 11 locations were collected from the following four depth intervals: 12 to 16, 20 to 24, 40 to 44, and 60 to 64 feet below ground surface (bgs). The soil samples were analyzed for VOCs, semivolatile organic compounds (SVOCs) (including low level PAHs), polychlorinated biphenyls (PCBs), total recoverable petroleum hydrocarbons, and metals. Groundwater samples were analyzed for VOCs using a mobile laboratory.

The results of the SI confirmed that analyte concentrations in excess of the SI-specific PALs were present in soil and groundwater. During the review of the SI data, the NAS Jacksonville Installation Restoration Partnering Team (Partnering Team) agreed the SI-specific PALs would be the RI-specific PSLs. A few VOCs were present in soil at concentrations exceeding the SI PALs; however, PAHs appeared to be the primary human health risk driver in soil as a number of these compounds were detected at concentrations exceeding the FDEP SCTLs associated with direct exposure by commercial/industrial land use.

During the SI, groundwater was analyzed using a mobile laboratory for a reduced set of target analytes. Fewer analytes were detected in groundwater in the vicinity of the former Wash Rack Disposal Pit than downgradient of the Wash Rack Disposal Pit. The concentrations of these analytes associated with the Wash Rack Disposal Pit were generally less than concentrations in groundwater from 300 to 500 feet downgradient of the former Wash Rack Disposal Pit. No analytes were detected above the SI-specific

PALs in the 60- to 64-foot bgs depth interval from the wells installed adjacent the former Wash Rack Disposal Pit. The majority of analytes detected in groundwater were VOCs that are not usually associated with oil or petroleum hydrocarbons. Most of the analytes were detected in groundwater collected downgradient of the former Wash Rack Disposal Pit. The greatest frequencies of detection were in the 20- to 24- and the 40- to 44-foot bgs depth intervals. No analytes were detected in excess of the SI-specific PALs in the 60- to 64-foot bgs depth interval from the wells installed downgradient of the former Wash Rack Disposal Pit (Tetra Tech, 2011b).

2.4 NATURE AND EXTENT OF CONTAMINATION

2.4.1 Sources of Contamination

The source of contamination at PSC 45 is the former Building 200 Wash Rack Disposal Pit (see Figure 2-3). The pit was a French drain design that leached directly into the subsurface soil. The disposal pit was gravel filled with an earthen bottom and a concrete lid approximately 4 feet in diameter. The disposal pit received overflow from a subfloor oil/water separator located in the Wash Rack Room. This room is located approximately 20 feet west of the disposal pit.

In the past, ground support equipment was cleaned in the wash rack and, while in the wash rack, solvents were used to strip paint off the equipment. For an unknown period of time (up to 1991), the disposal pit received overflow from an oil/water separator associated with the wash rack. The disposal pit was discovered in 1991 during plumbing repair work at Building 200. After the pit was discovered, the connection from the oil/water separator to the pit was plugged, and waste from the pit was removed and disposed of as hazardous waste.

2.4.2 Phase I – Groundwater Sample Results

The Phase I groundwater sampling at PSC 45 took place on May 4, 2011. A summary of detections is presented in Table 2-1, and a tag map showing detections exceeding PSLs is presented on Figure 2-4. A summary of the complete analysis is presented in Table A-1 of Appendix A.

A review of Figure 2-4 shows a similar pattern of contamination in both sets of wells. Naturally occurring contaminants (metals) were detected in exceedance of the applicable PSLs in both site wells (JAX45-B200-MW01S and JAX45-B200-MW01D) and both downgradient wells (JAX45-B200-MW02S and JAX45-B200-MW02D). Ten organic compounds were detected in exceedance of the applicable PSLs in the shallow site well (JAX45-B200-MW01S). Seven organic compounds were detected in exceedance of the applicable PSLs in the downgradient shallow well (JAX45-B200-MW02S).

Table 2-1
Summary of Detections from Phase I Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 3

LOCATION	PSL	JAX45-B200-MW01D	JAX45-B200-MW01S	JAX45-B200-MW02D	JAX45-B200-MW02S
SAMPLE IDENTIFICATON		JAX-45-B200-MW01D- 20110504	JAX-45-B200-MW01S- 20110504	JAX-45-B200-MW02D- 20110504	JAX-45-B200-MW02S- 20110504
SAMPLE DATE		20110504	20110504	20110504	20110504
METALS (µg/L)					
ALUMINUM	200	218 J	251 J	2420	58.7 J
ARSENIC	0.045	1.43 U	1.7 J	1.43 U	8.2
BARIUM	290	34.2	20.3	37.6	32.8
CALCIUM	NC	8760	96600	32900	8420
CHROMIUM	0.031	0.88 J	2.6 J	6 J	0.36 U
COBALT	0.47	3.7 J	0.39 J	0.74 J	8.7 J
COPPER	62	0.63 U	1.5 J	3.5 J	0.63 U
IRON	300	1210	4860	7720	19800
LEAD	15	1.07 U	1.1 J	2.4 J	1.07 U
MAGNESIUM	NC	2050	5850	11500	2310
MANGANESE	32	160	231	104	179
MERCURY	0.43	0.01 U	0.01 U	0.03 J	0.01 U
NICKEL	30	1.6 J	0.64 J	2.5 J	0.71 J
POTASSIUM	NC	1190	5490	2710	1410
SELENIUM	7.8	2.36 U	2.36 U	3 J	2.36 U
SILVER	7.1	0.27 U	0.27 U	0.27 U	0.43 J
SODIUM	160000	9220	8520	3770	8160
VANADIUM	7.8	0.29 J	1.1 J	5.2 J	0.23 U
ZINC	470	17.5 J	11.7 J	5.7 J	11.6 J
PETROLEUM HYDROCARBONS (µg/L)					
TPH (C08-C40)	5000	140 U	12000	140 U	310 J
POLYCYCLIC AROMATIC HYDROCARBONS (µg/L)					
1-METHYLNAPHTHALENE	0.97	0.069 U	12	0.069 U	0.065 U
2-METHYLNAPHTHALENE	2.7	0.078 U	9.3	0.078 U	0.074 U
ACENAPHTHENE	20	0.065 U	0.085 J	0.065 U	0.062 U

Table 2-1
Summary of Detections from Phase I Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 3

LOCATION	PSL	JAX45-B200-MW01D	JAX45-B200-MW01S	JAX45-B200-MW02D	JAX45-B200-MW02S
SAMPLE IDENTIFICATON		JAX-45-B200-MW01D- 20110504	JAX-45-B200-MW01S- 20110504	JAX-45-B200-MW02D- 20110504	JAX-45-B200-MW02S- 20110504
SAMPLE DATE		20110504	20110504	20110504	20110504
POLYCYCLIC AROMATIC HYDROCARBONS (µg/L)					
BENZO(A)ANTHRACENE	0.029	0.046 U	0.047 U	0.046 U	0.14 J
BENZO(A)PYRENE	0.0029	0.067 U	0.068 U	0.16 J	0.063 U
FLUORENE	22	0.062 U	0.081 J	0.062 U	0.059 U
NAPHTHALENE	0.14	0.065 U	52	0.065 U	0.062 U
SEMOVOLATILES (µg/L)					
1,1-BIPHENYL	0.083	2.7 U	3.4 J	2.7 U	2.6 U
2,4-DIMETHYLPHENOL	27	4.4 U	12	4.4 U	4.2 U
DI-N-BUTYL PHTHALATE	67	2.5 U	4.1 J	2.5 U	2.4 U
VOLATILES (µg/L)					
1,1-DICHLOROETHANE	2.4	0.21 U	0.21 U	0.21 U	56
1,1-DICHLOROETHENE	7	0.35 U	0.35 U	0.38 J	750
1,2-DICHLOROBENZENE	28	0.15 U	8.6	0.15 U	0.15 U
1,2-DICHLOROETHANE	0.15	0.2 U	0.2 U	0.2 U	20
1,4-DICHLOROBENZENE	0.42	0.24 U	1.7	0.24 U	0.24 U
BENZENE	0.39	0.26 U	0.34 J	0.26 U	1.1
CIS-1,2-DICHLOROETHENE	2.8	0.21 U	13	0.21 U	2.2
CYCLOHEXANE	1300	0.31 U	1.6	0.31 U	0.31 U
ETHYLBENZENE	1.3	0.21 U	10	0.21 U	0.21 U
ISOPROPYLBENZENE	0.8	0.23 U	3.5	0.23 U	0.23 U
METHYL CYCLOHEXANE	NC	0.3 U	3.4	0.3 U	0.3 U
TETRACHLOROETHENE	3.5	0.4 U	16	0.4 U	0.4 U
TOLUENE	40	0.27 U	24	0.27 U	0.36 J
TOTAL XYLEMES	19	0.25 U	44	0.25 U	0.25 U
TRICHLOROETHENE	0.26	0.28 U	2.3	0.31 J	390
VINYL CHLORIDE	0.015	0.25 U	0.25 U	0.25 U	0.7 J

Table 2-1
Summary of Detections from Phase I Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 3 of 3

Notes:

µg/L = microgram per liter

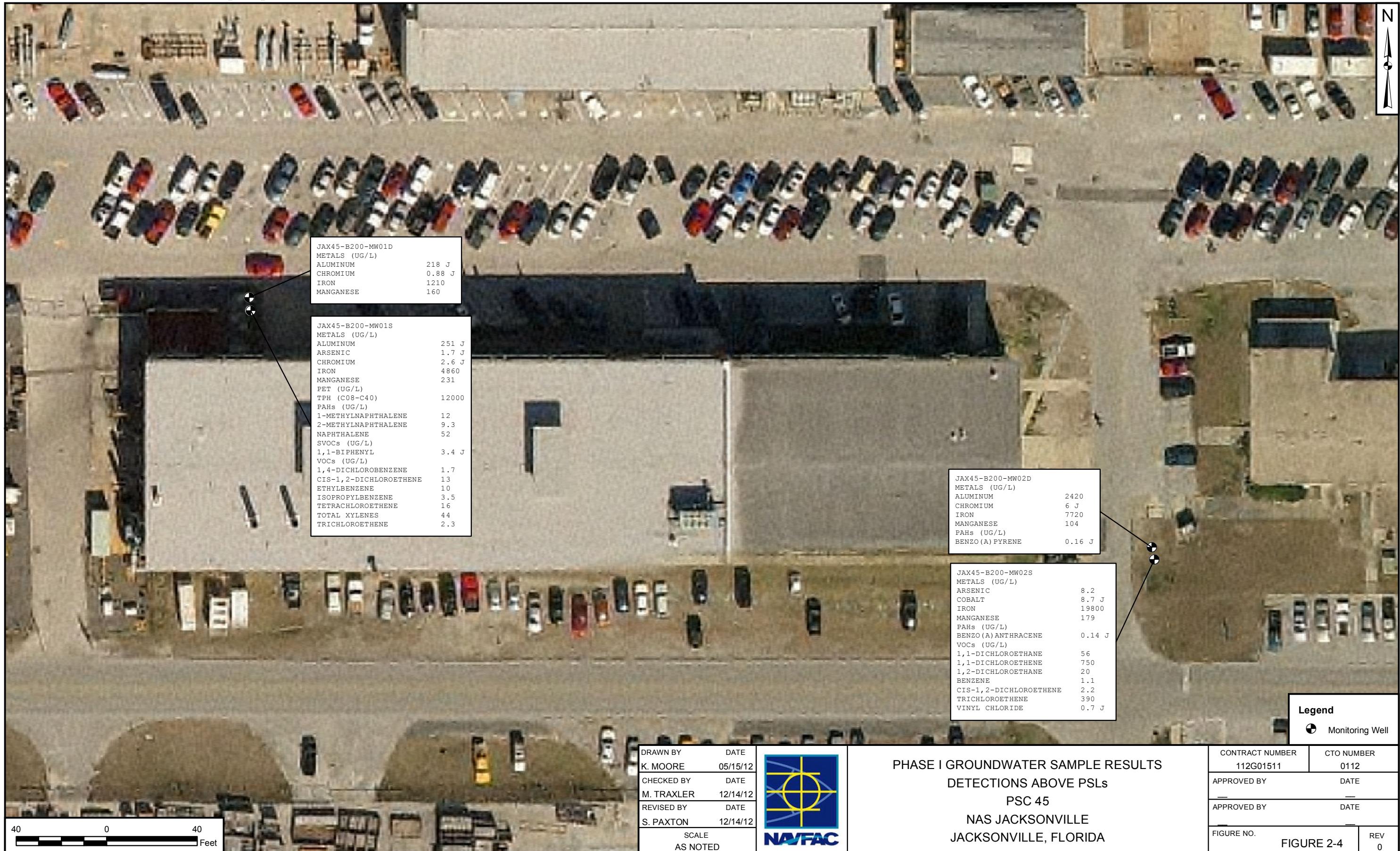
TPH = total petroleum hydrocarbons

NC = no criteria

J = estimated value

U = undetected value

Shaded cells indicate an exceedance of the PSL



Benzo(a)pyrene (BAP) was the only organic compound detected in exceedances of the applicable PSLs in the downgradient deep well (JAX45-B200-MW02D). The results by analyte groups are discussed below.

2.4.2.1 Metals

Six metals were detected at concentrations exceeding the PSLs in at least one of the four monitoring wells (see Table 2-1 and Figure 2-4). Iron and manganese were detected in exceedance of the applicable PSLs in both site wells and in both downgradient wells. Aluminum was detected in exceedance of the applicable PSL in both site wells and in the deep downgradient well. Arsenic was detected in exceedance of the applicable PSL in the shallow site well and the shallow downgradient well. Chromium was detected in exceedances of the applicable PSL in both site wells and the downgradient deep well. Cobalt was detected in exceedance of the applicable PSL in only the one shallow downgradient well.

2.4.2.2 PCBs

No PCBs were detected in any of the groundwater samples (see Table A-1 in Appendix A).

2.4.2.3 Petroleum Hydrocarbons

TPH (with carbon ranges from C08-C40) was detected in exceedance of the PSL of 5,000 µg/L in the shallow site well at a concentration of 12,000 µg/L. TPH (C08-C40) was not detected in the deep site well or in the deep downgradient well. This analyte was detected at a low concentration (310 J* µg/L) in the shallow downgradient well (see Table 2-1 and Figure 2-4). (*J is a results flag for an estimated value.)

2.4.2.4 PAHs

Five PAHs were detected in excess of their respective PSLs in at least one of the four monitoring wells (see Table 2-1 and Figure 2-4). 1-Methylnaphthalene, 2-methylnaphthalene, and naphthalene were detected in exceedance of the applicable PSLs in the shallow site well. Benzo(a)anthracene was detected in exceedance of the applicable PSL in the shallow downgradient well. BAP was detected in exceedance of the applicable PSL in the deep downgradient well.

2.4.2.5 SVOCs

One SVOC (1,1-biphenyl) was detected in excess of the applicable PSL of 0.5 µg/L. This analyte was detected at a concentration of 3.4 J µg/L in the shallow site well. No other SVOCs were detected in excess of the applicable PSLs in any of the four monitoring wells (see Figure 2-4 and Table 2-1).

2.4.2.6 VOCs

Eleven VOCs were detected in excess of the applicable PSLs in the shallow site well and in the shallow downgradient well (see Figure 2-4 and Table 2-1). Seven VOCs were detected in excess of the applicable GCTLs in the shallow site well (JAX45-B200-MW01S). These VOCs were 1,4-dichlorobenzene, cis-1,2-dichloroethene, ethylbenzene, isopropylbenzene, tetrachloroethene, total xylenes, and trichloroethene. A different set of six VOCs were detected in excess of the applicable PSLs in the shallow downgradient well (JAX45-B200-MW02S). These included 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, benzene, trichloroethene, and vinyl chloride. No VOCs were detected in excess of the applicable PSLs in the deep site well (JAX45-B200-MW01D) or the deep downgradient well (JAX45-B200-MW02D).

2.4.3 Phase II – Soil Sample Results

The Phase II soil sampling was conducted on June 24, 2011. A summary of detections is presented in Table 2-2 and a tag map showing detections above PSLs is presented on Figure 2-5. A summary of the complete analysis is presented in Table A-2 of Appendix A. The results by analyte groups are discussed below.

2.4.3.1 Metals

One or more metals were detected in excess of the applicable PSLs in each of the 10 sample locations (see Table 2-2 and Figure 2-5). Arsenic was detected in exceedance of the applicable PSL in soil samples collected from all 10 sample locations (see Table 2-2). Cadmium was detected in exceedance of the applicable PSL of 7.5 milligrams per kilogram (mg/kg) in one soil sample (JAX-45-SB12-SB-06242011) at a concentration of 15.8 mg/kg, but the concentration in the duplicate soil sample (JAX-45-SB12-SB-06242011-D) was 3.6 mg/kg, which is less than the applicable PSL. Chromium was detected in exceedance of the applicable PSL in soil samples collected from 9 of 10 sample locations (see Table 2-2).

2.4.3.2 PCBs

No PCBs were detected in any of the soil samples (see Table A-2 in Appendix A).

2.4.3.3 Petroleum Hydrocarbons

TPH (C08-C40) was not detected in any soil sample at a concentration that was in excess of the PSL (see Table 2-2).

Table 2-2
Summary of Detections from Phase II Soil Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 2

LOCATION	PSL	JAX45-SB05	JAX45-SB06	JAX45-SB07	JAX45-SB08	JAX45-SB09	JAX45-SB10	JAX45-SB11	JAX45-SB12			JAX45-SB13	JAX45-SB14
SAMPLE IDENTIFICATION		JAX-45-SB05-SB-06242011	JAX-45-SB06-SB-06242011	JAX-45-SB07-SB-06242011	JAX-45-SB08-SB-06242011	JAX-45-SB09-SB-06242011	JAX-45-SB10-SB-06242011	JAX-45-SB11-SB-06242011	JAX-45-SB12-SB-06242011	JAX-45-SB12-SB-06242011-AVG	JAX-45-SB12-SB-06242011-D	JAX-45-SB13-SB-06242011	JAX-45-SB14-SB-06242011
SAMPLE DATE		20110623	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624
TOP DEPTH		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
BOTTOM DEPTH		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
METALS (mg/kg)													
ALUMINUM		7700	1980 J	2730 J	2430 J	209 J	3770 J	2060 J	2690 J	1730 J	1209.5	689 J	4000 J
ANTIMONY		3.1	0.08 U	0.06 U	0.06 U	0.06 U	0.07 U	0.06 U	0.15 J	0.08 J	0.055	0.06 U	0.08 J
ARSENIC		0.39	0.54 J	0.64 J	0.66 J	0.56 J	0.82	0.74	0.59 J	0.81 J	0.745	0.68	0.58 J
BARIUM		1500	7.4 J	6.3 J	8.5 J	4.8 J	7.9 J	4.8 J	10.4 J	19.2 J	13.25	7.3 J	11 J
BERYLLIUM		16	0.05 J	0.06 J	0.09 J	0.02 U	0.07 J	0.03 J	0.12 J	0.15 J	0.08	0.02 U	0.09 J
CADMIUM		7	0.7 J	0.37 J	0.78 J	0.05 J	0.06 J	0.05 J	0.26 J	15.8 J	9.7	3.6 J	1.2 J
CALCIUM		NC	3420	1630	11400	766	16000	5870	61000	8340	6680	5020	6550
CHROMIUM		0.29	4.7 J	3.4 J	6.7 J	0.64 U	4.1 J	2.6 J	5.5 J	28.9 J	15.75	2.6 J	6.7 J
COBALT		2.3	0.21 J	0.13 J	0.29 J	0.03 U	0.18 J	0.08 J	0.35 J	1.3 J	0.7	0.1 J	0.39 J
COPPER		310	4.1	3.2	7.2	1.8 J	4.1	1.8 J	3.9	24.4	25.1	25.8	5.2
IRON		5500	615 J	1040 J	1470 J	193 J	1010 J	396 J	710 J	2320 J	1580	840 J	1010 J
LEAD		400	22.5 J	14 J	47.9 J	4.9 J	5.4 J	3.2 J	9.3 J	136 J	76.95	17.9 J	30.4 J
MAGNESIUM		NC	117 J	136 J	200 J	26 J	274 J	128 J	743 J	451 J	261.55	72.1 J	232 J
MANGANESE		180	9.8	14.2	25.6	6.7	10.7	6.8	23	70.7	62.15	53.6	17.9
MERCURY		0.78	0.02 U	0.07	0.055	0.04	0.03 U						
NICKEL		150	1.3 J	1.1 J	1.5 J	0.12 U	1 J	0.74 J	1.7 J	3.9 J	2.36	0.82 J	1.9 J
SILVER		39	0.03 U	0.02 U	0.03 J	0.02 U	0.03 U	0.02 U	0.03 U	0.08 J	0.045	0.02 U	0.03 J
VANADIUM		39	2.1 J	3	4	0.81 J	4.4	2.1 J	7	10	7	4	3.9
ZINC		2300	24.8 J	24.7 J	31.4 J	1.7 J	14.9 J	6.6 J	21.2 J	623 J	368.5	114 J	42.3 J
MISCELLANEOUS PARAMETERS (%)													
TOTAL SOLIDS		NC	72	86	82	95	86	82	83	93	93	93	80
PETROLEUM HYDROCARBONS (mg/kg)													
TPH (C08-C40)		340	250	210	140	100	28	29	72	230	210	190	200
POLYCYCLIC AROMATIC HYDROCARBONS (µg/kg)													
1-METHYLNAPHTHALENE		3100	6.7 J	8.9 J	10 J	1.8 U	1.9 U	1.9 U	7.2 J	5.9 J	4.75	3.6 J	3.2 J
2-METHYLNAPHTHALENE		8500	7.8 J	5.4 J	13 J	2.3 U	2.5 U	2.5 U	3.5 J	5.7 J	4.15	2.6 J	3 J
ACENAPHTHENE		2100	17 J	68	25	4 J	1.7 U	1.7 U	37	18 J	15.5	13 J	8.7 J
ACENAPHTHYLENE		27000	2.9 J	1.4 U	6.3 J	11 J	1.4 U	1.3 U	1.4 U	2.3 J	2.55	2.8 J	3.8 J
ANTHRACENE		2500000	12 J	57	12 J	6.6 J	2.8 J	1.3 U	74	13 J	15.5	18 J	7.9 J
BAP EQUIVALENT-HALFND		15	134.47	446.02	257.03	234.88	53.712	17.1561	248.08	165.82	173.315	180.81	145.379
BENZO(A)ANTHRACENE		150	68	280 J	130	110 J	32	4 J	230	82	96	110	72 J
BENZO(A)PYRENE		15	87	300	170	150	35	11 J	160	110	115	120	93 J
BENZO(B)FLUORANTHENE		150	150	430	280	240	52	15 J	260	190	190	190	160 J
BENZO(G,H,I)PERYLENE		1700000	69	130	100	99	18 J	9.4 J	67	67	68.5	70	78 J
BENZO(K)FLUORANTHENE		1500	57	170	86	76	18 J	5 J	88	60	64.5	69	49
CHRYSENE		15000	100	320	170	120	32	6.1 J	200	120	120	120	89 J
DIBENZO(A,H)ANTHRACENE		15	15 J	49	30	34	6.9 J	2.8 J	26	18 J	19	20 J	19 J
FLUORANTHENE		1200000	200	640	340	150	58	7.7 J	660	250	275	300	150 J
FLUORENE		160000	10 J	46	16 J	3.3 U	3.6 U	3.6 U	27	14 J	11.35	8.7 J	6 J

Table 2-2
Summary of Detections from Phase II Soil Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 2

LOCATION	PSL	JAX45-SB05	JAX45-SB06	JAX45-SB07	JAX45-SB08	JAX45-SB09	JAX45-SB10	JAX45-SB11	JAX45-SB12			JAX45-SB13	JAX45-SB14	
SAMPLE IDENTIFICATION		JAX-45-SB05-SB-06242011	JAX-45-SB06-SB-06242011	JAX-45-SB07-SB-06242011	JAX-45-SB08-SB-06242011	JAX-45-SB09-SB-06242011	JAX-45-SB10-SB-06242011	JAX-45-SB11-SB-06242011	JAX-45-SB12-SB-06242011	JAX-45-SB12-SB-06242011-AVG	JAX-45-SB12-SB-06242011-D	JAX-45-SB13-SB-06242011	JAX-45-SB14-SB-06242011	
SAMPLE DATE		20110623	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624	20110624	
TOP DEPTH		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
BOTTOM DEPTH		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
POLYCYCLIC AROMATIC HYDROCARBONS (µg/kg)														
INDENO(1,2,3-CD)PYRENE		150	100 J	240	150 J	150 J	32 J	14 J	120 J	99 J	99.5	100 J	96 J	6.6 J
NAPHTHALENE		1200	15 J	6.3 J	33	2.7 U	2.9 U	2.9 U	3 U	13 J	8	3 J	4 J	3 U
PHENANTHRENE		250000	150	360 J	200	40 J	9.9 J	2.2 J	360 J	160	145	130	76 J	2.2 J
PYRENE		880000	140	390 J	220	110 J	34	6 J	350 J	160	180	200	120 J	3.9 J
SEMIVOLATILES (µg/kg)														
BIS(2-ETHYLHEXYL)PHTHALATE		35000	130 U	110 U	120 U	100 U	110 U	110 U	220 J	100 U	140	230 J	120 U	110 U
VOLATILES (µg/kg)														
TETRACHLOROETHENE		30	1.4 U	1.2 U	1.3 U	1.2 U	1.3 U	1.4 U	7.2	2.6 J	2.35	2.1 J	3.5 J	1.2 U

Notes:

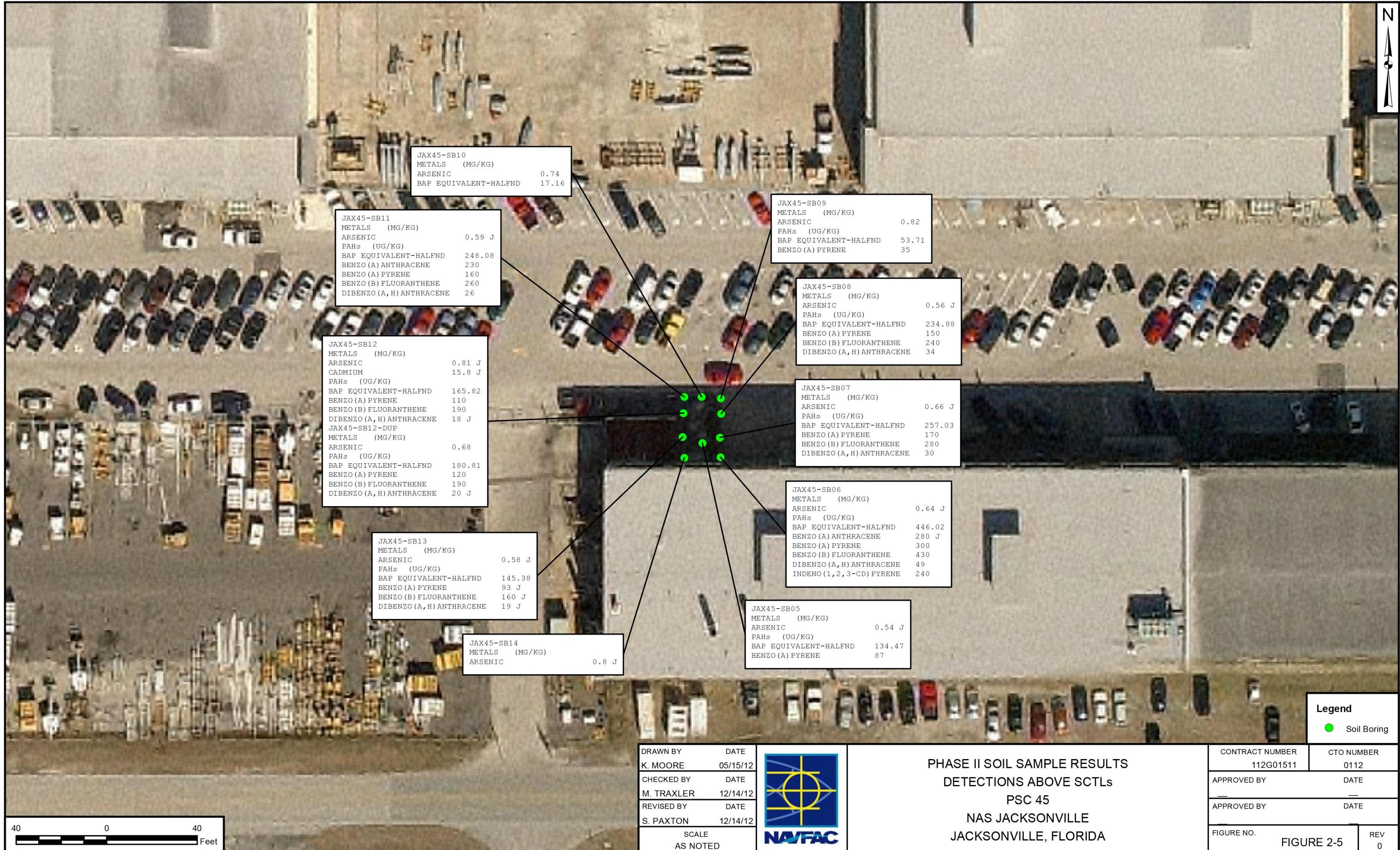
µg/kg = microgram per kilogram

nc = no criteria

J = estimated value

U = undetected value

Shaded cells indicate an exceedance of the PSL.



2.4.3.4 PAHs

One or more of the individual PAHs [benzo(a)anthracene, BAP, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene] exceeded applicable PSLs at 8 of the 10 sample locations (see Table 2-2 and Figure 2-5). The calculated BAP equivalent (BAEq), which represents the risk-based sum of the seven carcinogenic PAHs (cPAHs), was exceeded at 9 of the 10 soil sample locations.

2.4.3.5 SVOCs

No SVOCs were detected in any of the soil samples at a concentration that exceeded applicable PSLs (see Table 2-2).

2.4.3.6 VOCs

No VOCs were detected in any of the soil samples at a concentration that exceeded applicable PSLs (see Table 2-2).

2.4.4 Phase II – Groundwater Sample Results

The Phase II groundwater sampling was performed from June 20 through June 23, 2011. A summary of detections is presented in Table 2-3, and a tag map showing detections exceeding PSLs is presented on Figure 2-6. A summary of the complete analysis is presented in Table A-3 of Appendix A.

Interpretation of Groundwater Data

In general, VOCs and naturally occurring metals are the dominant analytes detected in excess of the applicable PSLs in groundwater at PSC 45 (see Figures 2-4 and 2-6). The impact to groundwater is primarily limited to the upper and intermediate layer of the surficial aquifer beneath PSC 45. Only one analyte (chloroform at 2.8 µg/L) was exceeded the applicable PSL in one location (JAX-45-DPT13) from a sample collected from the 60- to 64-foot bgs sample depth interval (see Figure 2-6).

A review of Figure 2-6 shows that some target analytes for the Phase II groundwater sampling event (i.e., VOCs) were detected in exceedance of the applicable PSLs in 6 of the 11 sample locations. Three of these locations (DPT21, DPT17, and DPT18) were similar in nature in that only trichloroethene was detected at low levels close the PSL value. Three other locations (DPT13, DPT22, and DPT12) were distinctively different with similar grouping of multiple constituents exceeding the PSLs.

Table 2-3
Summary of Detections from Phase II Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 6

LOCATION	PSL	JAX45-DPT12				JAX45-DPT13				JAX45-DPT14	
		JAX-45-DPT12-12-06202011	JAX-45-DPT12-20-06202011	JAX-45-DPT12-40-06202011	JAX-45-DPT12-60-06202011	JAX-45-DPT13-12-06202011	JAX-45-DPT13-20-06202011	JAX-45-DPT13-40-06202011	JAX-45-DPT13-60-06202011	JAX-45-DPT14-12-06202011	JAX-45-DPT14-12-06202011-AVG
SAMPLE IDENTIFICATION	SAMPLE DATE	20110620	20110620	20110620	20110620	20110620	20110620	20110620	20110620	20110620	20110620
DEPTH		12-16	20-24	40-44	60-64	12-16	20-24	40-44	60-64	12-16	12-16
VOLATILES (µg/L)											
1,1,2-TRICHLOROETHANE	0.24	0.33 U									
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	0.31 U									
1,1-DICHLOROETHANE	2.4	7.9	4.2	6.8	0.21 U	4.2	2	0.21 U	0.21 U	0.21 U	0.21 U
1,1-DICHLOROETHENE	7	56	40	67	0.35 U	6.5	3.2	0.44 J	0.35 U	0.35 U	0.35 U
1,2-DICHLOROBENZENE	280	0.15 U	0.15 U	0.15 U	0.15 U	0.36 J	0.15 U				
1,2-DICHLOROETHANE	0.15	47	37	65	0.2 U	3.2	1.6	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	4200	1.3 U	1.3 U	1.3 U	1.3 U	1.3 UJ	1.3 U				
ACETONE	6300	2.2 UJ	3.3 J	2.2 UJ	2.2 UJ	2.2 UJ	2.2 UJ				
BENZENE	0.39	0.34 J	0.76 J	0.36 J	0.26 U	0.41 J	0.32 J	0.26 U	0.26 U	0.26 U	0.26 U
CARBON DISULFIDE	700	0.38 J	0.25 U	0.35 J	0.25 U	0.56 J	0.46 J	2.8	0.42 J	0.25 U	0.25 U
CARBON TETRACHLORIDE	0.39	0.22 U	0.22 U	0.22 U	0.22 U	0.95 J	54	860	0.22 U	0.22 U	0.22 U
CHLOROFORM	0.19	0.32 U	0.32 U	0.32 U	0.32 U	5.8	500	900	2.8	0.32 U	0.32 U
CHLOROMETHANE	2.7	0.36 U	0.36 U	0.36 U	0.36 U	0.62 J	0.36 U				
CIS-1,2-DICHLOROETHENE	2.8	150	46	34	0.21 U	43	21	0.21 U	0.36 J	0.53 J	0.53 J
METHYL CYCLOHEXANE	NC	0.3 U	0.4 J	0.3 U	0.3 U	0.3 U					
METHYLENE CHLORIDE	4.7	1.1 U	1.7 J	6.1	1.1 U	1.1 U					
TETRACHLOROETHENE	0.072	0.4 U	5.4	13	0.4 U	0.4 U	0.4 U				
TOLUENE	40	0.27 U	1.3	4.6	0.27 U	0.27 U	0.27 U				
TOTAL XYLEMES	19	0.25 U	6.2	0.25 U	0.25 U	0.25 U					
TRANS-1,2-DICHLOROETHENE	86	7.7	0.64 J	0.25 U	0.25 U	4.2	1.4	0.25 U	0.25 U	0.25 U	0.25 U
TRICHLOROETHENE	0.26	4.7	21	46	0.28 U	24	11	0.4 J	0.28 U	0.28 U	0.28 U
VINYL CHLORIDE	0.015	5.5	1.1 J	0.54 J	0.25 U	2.9	1.2 J	0.25 U	0.25 U	0.25 U	0.25 U

Table 2-3
Summary of Detections from Phase II Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 6

LOCATION	PSL	JAX45-DPT14				JAX45-DPT15				JAX45-DPT16	
		JAX-45-DPT14-12-06202011-D	JAX-45-DPT14-20-06202011	JAX-45-DPT14-40-06202011	JAX-45-DPT14-60-06202011	JAX-45-DPT15-12-06202111	JAX-45-DPT15-20-06202111	JAX-45-DPT15-40-06202111	JAX-45-DPT15-60-06202111	JAX-45-DPT16-12-06202111	JAX-45-DPT16-20-06202111
SAMPLE IDENTIFICATION		20110620 12-16	20110620 20-24	20110620 40-44	20110620 60-64	20110621 12-16	20110621 20-24	20110621 40-44	20110621 60-64	20110621 12-16	20110621 20-24
SAMPLE DATE											
DEPTH											
VOLATILES (µg/L)											
1,1,2-TRICHLOROETHANE	0.24	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
1,1-DICHLOROETHANE	2.4	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
1,1-DICHLOROETHENE	7	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,2-DICHLOROBENZENE	280	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,2-DICHLOROETHANE	0.15	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	4200	1.3 U	1.3 U	1.3 U	1.3 U	1.3 UJ	1.3 UJ	6.6 J	1.3 UJ	1.3 UJ	1.3 UJ
ACETONE	6300	2.2 UJ	2.8 J	2.2 UJ	2.2 UJ	2.2 UJ	2.2 UJ	3.7 J	2.2 UJ	2.7 J	2.2 UJ
BENZENE	0.39	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CARBON DISULFIDE	700	0.31 J	0.41 J	0.25 U	0.25 U	0.25 U	0.65 J	0.25 U	0.25 U	0.25 U	0.54 J
CARBON TETRACHLORIDE	0.39	0.22 U	0.22 U	0.22 U	0.31 J	0.22 U					
CHLOROFORM	0.19	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
CHLOROMETHANE	2.7	0.52 J	0.44 J	1.1 J	1.1 J	0.36 U	0.46 J	0.36 U	0.43 J	0.4 J	0.36 U
CIS-1,2-DICHLOROETHENE	2.8	0.55 J	0.21 U								
METHYL CYCLOHEXANE	NC	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
METHYLENE CHLORIDE	4.7	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
TETRACHLOROETHENE	0.072	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
TOLUENE	40	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
TOTAL XYLEMES	19	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TRANS-1,2-DICHLOROETHENE	86	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TRICHLOROETHENE	0.26	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.33 J
VINYL CHLORIDE	0.015	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

Table 2-3
Summary of Detections from Phase II Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 3 of 6

LOCATION	PSL	JAX45-DPT16		JAX45-DPT17				JAX45-DPT18			
		JAX-45-DPT16-40-06202111	JAX-45-DPT16-60-06202111	JAX-45-DPT17-12-06202111	JAX-45-DPT17-20-06202111	JAX-45-DPT17-40-06202111	JAX-45-DPT17-60-06202111	JAX-45-DPT18-12-06202111	JAX-45-DPT18-20-06202111	JAX-45-DPT18-40-06202111	JAX-45-DPT18-40-06202111-AVG
SAMPLE IDENTIFICATION		20110621	20110621	20110621	20110621	20110621	20110621	20110621	20110621	20110621	20110621
SAMPLE DATE		40-44	60-64	12-16	20-24	40-44	60-64	12-16	20-24	40-44	40-44
DEPTH											
VOLATILES (µg/L)											
1,1,2-TRICHLOROETHANE	0.24	0.33 U									
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	0.31 U									
1,1-DICHLOROETHANE	2.4	0.21 U									
1,1-DICHLOROETHENE	7	0.35 U	0.35 U	0.35 U	3	0.35 U					
1,2-DICHLOROBENZENE	280	0.15 U									
1,2-DICHLOROETHANE	0.15	0.2 U									
2-BUTANONE	4200	6.5 J	1.3 UJ								
ACETONE	6300	3.3 J	2.2 UJ	2.2 UJ	2.2 UJ	2.8 J	2.2 UJ	4.2 J	3.2 J	3 J	3 J
BENZENE	0.39	0.26 U									
CARBON DISULFIDE	700	0.43 J	0.35 J	0.78 J	0.44 J	0.25 U	0.42 J	1.9	0.32 J	0.34 J	0.34 J
CARBON TETRACHLORIDE	0.39	0.22 U									
CHLOROFORM	0.19	0.32 U									
CHLOROMETHANE	2.7	0.36 U	0.36 U	0.36 U	0.36 U	1.1 J	0.6 J	0.36 U	0.48 J	0.36 U	0.36 U
CIS-1,2-DICHLOROETHENE	2.8	0.21 U	0.24 J	0.21 U	0.21 U						
METHYL CYCLOHEXANE	NC	0.3 U									
METHYLENE CHLORIDE	4.7	1.1 U									
TETRACHLOROETHENE	0.072	0.4 U									
TOLUENE	40	0.27 U									
TOTAL XYLEMES	19	0.25 U									
TRANS-1,2-DICHLOROETHENE	86	0.25 U									
TRICHLOROETHENE	0.26	0.28 U	0.28 U	0.71 J	8	0.28 U	0.28 U	0.28 U	1.7	0.42 J	0.42 J
VINYL CHLORIDE	0.015	0.25 U									

Table 2-3
Summary of Detections from Phase II Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 4 of 6

LOCATION	PSL	JAX45-DPT18			JAX45-DPT19						JAX45-DPT20	
		JAX-45-DPT18-40 06202111-D	JAX-45-DPT18-60 06202111	JAX-45-DPT19-12- 06222011	JAX-45-DPT19-20- 06222011	JAX-45-DPT19-40- 06222011	JAX-45-DPT19-40- 06222011-AVG	JAX-45-DPT19-40- 06222011-D	JAX-45-DPT19-60- 06222011	JAX-45-DPT20-12- 06222011	JAX-45-DPT20-20- 06222011	
SAMPLE IDENTIFICATION		20110621 40-44	20110621 60-64	20110622 12-16	20110622 20-24	20110622 40-44	20110622 40-44	20110622 40-44	20110622 60-64	20110622 12-16	20110622 20-24	
SAMPLE DATE												
DEPTH												
VOLATILES (µg/L)												
1,1,2-TRICHLOROETHANE	0.24	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	0.31 U	0.31 U	0.31 U	0.31 UJ	0.31 U	0.31 U	0.31 U	0.31 U	0.31 UJ	0.31 U	0.31 U
1,1-DICHLOROETHANE	2.4	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
1,1-DICHLOROETHENE	7	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,2-DICHLOROBENZENE	280	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,2-DICHLOROETHANE	0.15	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	4200	1.3 UJ	1.3 UJ	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
ACETONE	6300	2.8 J	2.2 UJ	3.3 U	3.1 U	3.2 U	3.2 U	3.1 J	3.1 U	4.1 U	5.7 U	
BENZENE	0.39	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CARBON DISULFIDE	700	0.25 U	0.25 U	0.33 J	0.6 J	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.4 J
CARBON TETRACHLORIDE	0.39	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
CHLOROFORM	0.19	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
CHLOROMETHANE	2.7	0.36 U	0.42 J	0.36 U	0.77 J	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.65 J	0.36 U
CIS-1,2-DICHLOROETHENE	2.8	0.25 J	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
METHYL CYCLOHEXANE	NC	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 U	0.3 U
METHYLENE CHLORIDE	4.7	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
TETRACHLOROETHENE	0.072	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
TOLUENE	40	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
TOTAL XYLEMES	19	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TRANS-1,2-DICHLOROETHENE	86	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TRICHLOROETHENE	0.26	0.87 J	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
VINYL CHLORIDE	0.015	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

Table 2-3
Summary of Detections from Phase II Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 5 of 6

LOCATION	PSL	JAX45-DPT20				JAX45-DPT21			
		JAX-45-DPT20-40-06222011	JAX-45-DPT20-40-06222011-AVG	JAX-45-DPT20-40-06222011-D	JAX-45-DPT20-60-06222011	JAX-45-DPT21-12-06222011	JAX-45-DPT21-20-06222011	JAX-45-DPT21-40-06222011	JAX-45-DPT21-60-06222011
SAMPLE IDENTIFICATION		20110622	20110622	20110622	20110622	20110622	20110622	20110622	20110622
SAMPLE DATE		40-44	40-44	40-44	60-64	12-16	20-24	40-44	60-64
DEPTH									
VOLATILES (µg/L)									
1,1,2-TRICHLOROETHANE	0.24	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	0.31 U	0.31 U	0.31 U	0.31 U	0.31 UJ	0.31 UJ	0.31 U	0.31 UJ
1,1-DICHLOROETHANE	2.4	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
1,1-DICHLOROETHENE	7	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,2-DICHLOROBENZENE	280	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,2-DICHLOROETHANE	0.15	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	4200	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
ACETONE	6300	4.4 U	4.4 U	4.4 U	2.2 U	3.5 U	2.6 U	4.8 U	2.9 U
BENZENE	0.39	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CARBON DISULFIDE	700	0.42 J	0.42 J	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ
CARBON TETRACHLORIDE	0.39	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
CHLOROFORM	0.19	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
CHLOROMETHANE	2.7	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.5 J
CIS-1,2-DICHLOROETHENE	2.8	0.21 U	0.21 U	0.21 U	0.21 U	0.96 J	0.21 U	0.21 U	0.21 U
METHYL CYCLOHEXANE	NC	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 UJ	0.3 U	0.3 UJ
METHYLENE CHLORIDE	4.7	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
TETRACHLOROETHENE	0.072	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
TOLUENE	40	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
TOTAL XYLEMES	19	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TRANS-1,2-DICHLOROETHENE	86	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TRICHLOROETHENE	0.26	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	1.7	0.28 U
VINYL CHLORIDE	0.015	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

Table 2-3
Summary of Detections from Phase II Groundwater Analytical Results

Engineering Evaluation/Cost Analysis, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 6 of 6

LOCATION	PSL	JAX45-DPT22			
		JAX-45-DPT22-12-06232011	JAX-45-DPT22-20-06232011	JAX-45-DPT22-40-06232011	JAX-45-DPT22-60-06232011
SAMPLE IDENTIFICATION		20110623	20110623	20110623	20110623
SAMPLE DATE		12-16	20-24	40-44	60-64
DEPTH					
VOLATILES (µg/L)					
1,1,2-TRICHLOROETHANE	0.24	0.53 J	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	110	0.31 U	0.31 U	0.31 U
1,1-DICHLOROETHANE	2.4	44	14	2.1	0.21 U
1,1-DICHLOROETHENE	7	260	130	20	0.35 U
1,2-DICHLOROBENZENE	280	0.15 U	0.15 U	0.15 U	0.15 U
1,2-DICHLOROETHANE	0.15	280	88	16	0.2 U
2-BUTANONE	4200	1.3 U	1.3 U	1.3 U	1.3 U
ACETONE	6300	2.2 UJ	4.5 U	2.2 UJ	2.2 UJ
BENZENE	0.39	1.5	0.52 J	0.26 U	0.26 U
CARBON DISULFIDE	700	0.25 U	0.63 J	0.25 U	0.25 U
CARBON TETRACHLORIDE	0.39	0.22 U	0.22 U	0.22 U	0.22 U
CHLOROFORM	0.19	0.32 U	0.32 U	0.32 U	0.32 U
CHLOROMETHANE	2.7	0.36 U	0.36 U	0.44 J	0.36 U
CIS-1,2-DICHLOROETHENE	2.8	800	320	11	0.21 U
METHYL CYCLOHEXANE	NC	0.3 U	0.3 U	0.3 U	0.3 U
METHYLENE CHLORIDE	4.7	1.1 U	1.1 U	1.1 U	1.1 U
TETRACHLOROETHENE	0.072	0.4 U	0.4 U	0.4 U	0.4 U
TOLUENE	40	0.27 U	0.27 U	0.27 U	0.27 U
TOTAL XYLEMES	19	0.25 U	0.25 U	0.25 U	0.25 U
TRANS-1,2-DICHLOROETHENE	86	3.6	10	0.6 J	0.25 U
TRICHLOROETHENE	0.26	58	5.8	19	0.28 U
VINYL CHLORIDE	0.015	1.6 J	0.73 J	0.25 U	0.25 U

Notes:

nc = no criteria

J = estimated value

U = undetected value

Shaded cells indicate an exceedance of the PSL.

Based on the Phase II sampling events, the horizontal distribution of contaminants appears to be defined in all intervals to the northwest, west, and south of PSC 45; however, the groundwater plume is not defined to the northeast.

A review of the Phase II data from the areas to the northeast (DPT13, DPT22, and DPT12) shows that those results are distinctly different from the chemical profiles of other sampling locations at PSC 45. One constituent of note, carbon tetrachloride detected at sample location DPT13, is not detected anywhere else at PSC 45 in any media and, combined with the distinctive chemical profile of these locations, suggests that a secondary source of contamination originating somewhere in the vicinity of Building 175A or Building 115 is likely to be responsible for impacts to groundwater detected during this investigation of PSC 45. Based on review of this information, the Partnering Team has determined that additional investigation into this possible second source area should be conducted as a separate site, and that further investigation of the area to the northeast of PSC45 is not warranted as part of the PSC 45 RI.

A review of the data from other areas of PSC 45 shows that the chemical profile of samples from the two shallow wells was similar to each other, as was the chemical profile of the samples from the two deep wells (see Figure 2-4). Metals and organic compounds were detected in excess of the applicable PSLs in both the shallow site well (JAX45-B200-MW01S) and the shallow downgradient well (JAX45-B200-MW02S). Metals, but no organic compounds, were detected in excess of the applicable PSL in the sample collected from the deep site well (JAX45-B200-MW01D), while both metals and one organic compound (BAP) were detected in excess of the applicable PSLs in the sample collected from the deep downgradient well (JAX45-B200-MW02D).

2.4.5 Risk Evaluation/Determination of Cleanup Concentration

The Human Health Risk Evaluation and Ecological Risk Assessment (ERA) were completed as part of the RI Report for PSC 45 (Tetra Tech, 2013). The following sections summarize the conclusions of RI Report.

2.4.5.1 Human Health Risks

Risks for exposure to soil, groundwater, and inhalation of VOCs present in groundwater as a result of vapor intrusion at PSC 45 by hypothetical future residents were evaluated. In addition, risks associated with exposure to soil and vapor intrusion at PSC 45 by industrial workers and risks associated with exposure to soil by maintenance workers, construction workers, and adolescent trespassers were evaluated.

- Cumulative carcinogenic risks for residential exposure to soil, groundwater, and inhalation of VOCs associated with vapor intrusion exceeded the United States Environmental Protection Agency's (USEPA) target risk range of 10^{-4} to 10^{-6} and the FDEP's target risk level of 10^{-6} . Cumulative noncarcinogenic risks for residential exposure to soil, groundwater, and inhalation of VOCs associated with vapor intrusion exceeded the USEPA's and the FDEP's target Hazard Index (HI) of 1.
- Carcinogenic risks for residential exposure to groundwater were greater than the USEPA's target risk range and the FDEP's target risk level. Noncarcinogenic risks for residential exposure to groundwater were greater than the USEPA's and the FDEP's target HI.
- Carcinogenic risks for residential exposure to soil were greater than the FDEP's target risk level, but were within the USEPA's target risk range. Noncarcinogenic risks for residential exposure to soil were less than the USEPA's and the FDEP's target HI.
- Carcinogenic risks for residential exposure to VOCs through vapor intrusion exceeded the FDEP's target risk level, but were within the USEPA's target risk range. The noncarcinogenic risks associated with vapor intrusion for the hypothetical resident were equal to the USEPA's and the FDEP's target HI.
- Carcinogenic risks for the industrial worker and the construction worker were within the USEPA's target risk range. Noncarcinogenic risks for the industrial worker were less than the USEPA's target HI.
- Carcinogenic and noncarcinogenic risks for the maintenance worker and the adolescent trespasser were less than the USEPA's target risk range and target HI, respectively.
- Carcinogenic and noncarcinogenic risks for the industrial worker, maintenance worker, construction worker, and the adolescent trespasser were less than the FDEP's target risk level and HI, respectively.

Constituents of concern (COCs) are those contaminants in a media of concern that contribute to risks exceeding the USEPA's target risk range, the FDEP's target risk level, or the USEPA's and FDEP's target hazard quotient of 1 in a specific medium of concern or are present at concentrations exceeding applicable or relevant and appropriate requirements, such as the maximum contaminant level (MCL) in groundwater. For PSC 45, a COC has a risk level in a medium of concern greater than a cancer risk level of 10^{-6} or a HI of 1.0 or it exceeds the MCL or Groundwater Cleanup Target Level (GCTL).

- The COCs in groundwater are manganese, TPH, cPAHs, benzo(a)anthracene, BAP, naphthalene, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, benzene, isopropylbenzene, tetrachloroethene, trichloroethene, vinyl chloride, and xylene.
- Ethylbenzene was detected one time at a concentration groundwater corresponding to risks exceeding the USEPA or FDEP targets, but the maximum detected concentration was less than the USEPA MCL and FDEP GCTL.
- Vinyl chloride concentrations in groundwater also corresponded to risks exceeding targets, and its concentrations were less than the MCL or GCTL. Since vinyl chloride is also a degradation product of tetrachloroethene and trichloroethene, it was retained as a COC.
- Manganese, isopropylbenzene, and xylene were present at concentrations exceeding the MCL or GCTL, but the corresponding risks were less than target risk levels. Because of their exceedance of the MCL or GCTL, they were retained as COCs.

The carcinogenic risk for residential exposure to soil exceeded the FDEP's target risk level. Based upon the calculated BAPeq values, the COCs for soil are the cPAHs.

The carcinogenic risk for vapor intrusion also exceeded the FDEP's target risk level. The COC in groundwater responsible for the vapor intrusion risk is trichloroethene. This analyte is also listed as a COC in groundwater.

2.4.5.2 Ecological Risks

The ERA evaluated the potential risk to ecological receptors that may be exposed to soil and groundwater. With regard to the ecological receptors, it was determined that the terrestrial exposure pathway is incomplete. This is because the site-related contamination is limited to subsurface soil and groundwater and the urban/industrial nature of the area surrounding PSC 45 does not support utilization of the area by terrestrial receptors. Groundwater from the intermediate layer of the surficial aquifer that is associated with PSC 45 has not reached the St. Johns River; therefore, only the analytical data from groundwater samples collected within the upper surficial groundwater layer were evaluated in the ERA. Site-specific information shows that groundwater, from the upper surficial groundwater layer, seeps into the stormwater sewers. This groundwater is then conveyed approximately ½ mile to the point of discharge into the St. Johns River. The groundwater quality data associated with the upper surficial groundwater layer were compared to marine surface water Ecological Screening Values (ESVs) preferentially obtained from Chapter 62-302.530, Florida Administrative Code (F.A.C.), *Criteria for Surface Water Quality Classifications* (Class III, Predominantly Marine) (FDEP, 2012).

The results of the ERA indicate that one analyte (1,1-dichloroethene) was detected once in an upper surficial groundwater sample at a concentration (750 µg/L) that exceeded the FDEP's surface water ESV of 3.2 µg/L, but not the USEPA Region 4 surface water ESV of 2,240 µg/L. The comparison of the average 1,1-dichloroethene concentration against either surface water EVA is based upon the assumption that groundwater containing 1,1-dichloroethene seeps into the storm sewer, and the concentration does not change during the ½ mile transport from the point of seepage to the point of discharge. Therefore, it is premature to conclude that 1,1-dichloroethene is presenting a risk to aquatic receptors, as there are no data on the range of concentration of 1,1-dichloroethene in the storm sewer and all the groundwater concentrations of 1,1-dichloroethene were less than the USEPA Region 4 ESV.

Operable Unit (OU) 3 is currently undergoing an RI that includes an extensive evaluation of the storm sewer system from impacts from multiple chlorinated solvent groundwater plumes located across OU 3. This evaluation includes direct monitoring data collected from the storm sewers, outfalls, and sediment pore water from the St. Johns River. This evaluation is a more thorough evaluation of potential risks posed by contaminated groundwater intrusion into the storm sewer system. As a result, any risk posed to the storm sewer system from PSC 45 will likely be mitigated by any eventual remedy outcomes related to the storm sewers at OU 3.

3.0 IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES

This section develops RAOs and derives Preliminary Remedial Goals (PRGs) for the contaminated media. The regulatory requirements and guidances that may potentially govern remedial activities are presented in this section. In addition, this section presents the COCs identified in Section 1.0 and the conceptual pathways through which these chemicals may affect human health and, thus, derive the environmental media of concern. The PRGs for the contaminated media are developed in this section, and General Response Actions (GRAs) that may be suitable to achieve the PRGs are presented. Finally, this section presents an estimate of the volumes of contaminated media.

3.1 REMEDIAL ACTION OBJECTIVES

The purpose of this section is to develop RAOs for PSC 45 at NAS Jacksonville, Jacksonville, Florida. The RAOs are medium-specific goals that define the objective of conducting remedial actions to protect human health and the environment. The RAOs specify the COCs, potential exposure routes and receptors, and an acceptable range contaminant level (i.e., PRGs) for the site.

Site-specific RAOs specify COCs, media of interest, exposure pathways, and cleanup goals or acceptable contaminant concentrations. RAOs may be developed to permit consideration of a range of treatment and containment alternatives. This EE/CA addresses soil contamination at PSC 45. To protect the public from potential current and future health risks, as well as to protect the environment, the following RAOs have been developed:

- Prevent unacceptable risk from exposure to soil with concentrations of BAPeq and cadmium in excess of the FDEP residential SCTLs.
- Address the potential risk of transfer of organic and inorganic contamination from soil to groundwater for soil with concentrations that exceed the FDEP SCTLs for leachability.

3.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) CRITERIA

3.2.1 Chemical-Specific ARARs and TBCs

This section presents a summary of Federal and state chemical-specific ARARs and TBCs. These ARARs and TBCs provide some medium-specific guidance on “acceptable” or “permissible”

concentrations of contaminants. Tables 3-1 and 3-2 present a list of Federal and State of Florida chemical-specific ARARs and TBCs for this EE/CA.

3.2.2 Location-specific ARARs and TBCs

This section presents a summary of Federal and state location-specific ARARs and TBCs. These ARARs and TBCs place restrictions on concentrations of contaminants or the conduct of activities based upon the site's particular characteristics or location. Table 3-3 presents a list of Federal location-specific ARARs and TBCs for this EE/CA. There are no State of Florida location-specific ARARs and TBCs for this EE/CA.

3.2.3 Action-Specific ARARs and TBCs

Action-specific ARARs and TBCs are presented in Section 3.6 along with the GRA discussion.

3.3 MEDIA OF CONCERN

Based upon the discussion in Section 2.0 involving toxicity and risk assessment for both human and ecological receptors, the media of concern at PSC 45 was determined to be soil and groundwater.

3.4 CHEMICALS OF CONCERN FOR REMEDIATION

Previous sampling identified several chemicals in the soil as a concern to human receptors. Soil analytical data were compared to the FDEP SCTLs for direct residential exposure and leachability to groundwater. BAPEq and BAP were detected in soil above the FDEP SCTLs for direct residential exposure. These chemicals were, therefore, retained as COCs. Cadmium was also detected at one location in soil at a concentration in excess of the FDEP SCTL for leachability to groundwater. BAPEq, BAP, and cadmium are considered as COCs.

3.5 PRELIMINARY REMEDIATION GOALS

A PRG is the target concentration to which a COC must be reduced within a particular medium of concern to achieve one or more of the established RAOs. PRGs are developed to ensure that contaminant concentration levels left on site are protective of human and ecological receptors.

Table 3-1
Federal Chemical-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Safe Drinking Water Act (SDWA) Regulations, MCLs	40 CFR Part 141	Relevant and Appropriate	Establishes enforceable standards for potable water for specific contaminants that have been determined to adversely affect human health.	Would be used as protective levels for groundwater or surface waters that are current or potential drinking water sources if soil contamination would potentially leach to groundwater sources.
SDWA Regulations, National Secondary Drinking Water Standards	40 CFR Part 143	TBC	Establishes welfare-based standards for public water systems for specific contaminants or water characteristics that may affect the aesthetic qualities of drinking water.	Would be used as protective levels for groundwater or surface waters that are current or potential drinking water source if soil contamination would potentially leach to groundwater sources.
USEPA Office of Drinking Water, Health Advisories	---	Potential TBC	Health advisories are estimates of non-carcinogenic risk due to consumption of contaminated drinking water.	These advisories would be considered for contaminants in surface water and groundwater that is or could be used as a potable water source if soil contamination would potentially leach to groundwater sources.
Cancer Slope Factors (CSFs)	---	TBC	CSFs are guidance values used to evaluate the potential carcinogenic hazard caused by exposure to contaminants.	CSFs would be considered for development of human health protection PRGs for soil at this site.
Reference Doses (RfDs)	---	TBC	RfDs are guidance values used to evaluate the potential noncarcinogenic hazard caused by exposure to contaminants.	RfDs would be considered for development of human health protection PRGs for soil at this site.

Notes:

CFR = Code of Federal Regulations

Table 3-2
State Chemical-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Surface Water Quality Standards	Chapter 62-302, F.A.C.	Potentially Applicable	This rule distinguishes surface water into five classes based on designated uses and establishes ambient water quality standards (called Florida Water Quality Standards) for listed pollutants.	Because these standards are specifically tailored to Florida waters, they should be used to establish cleanup levels rather than the federal Ambient Water Quality Criteria.
Groundwater Classes, Standards and Exemptions	Chapter 62-520, F.A.C.	Applicable	This rule designates the groundwater of the state into five classes and establishes minimum "free from" criteria. This rule also specifies that Classes I and II must meet the primary and secondary drinking water standards listed in Chapter 62-550.	This rule would be used to establish PRGs for groundwater that is a potential source of drinking water if soil contamination would potentially leach and impact groundwater source.
Drinking Water Criteria	Chapter 62-550, F.A.C.	TBC	This rule provides primary and secondary drinking water quality criteria.	This rule would be considered for the establishment of PRGs.
Contaminant Cleanup Target Levels Rule	Chapter 62-777, F.A.C.	TBC	This rule provides guidance for soil, groundwater, and surface water cleanup levels that can be developed on a site-by-site basis.	This rule would be considered for the establishment of PRGs.

Table 3-3
Federal Location-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 2

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Endangered Species Act Regulations	50 CFR Parts 81, 225,402	Potentially Applicable	Requires federal agencies to act to avoid jeopardizing the continued existence of federally listed endangered or threatened species.	If a site investigation or remediation could potentially affect an endangered species, these regulations would apply.
Historic Sites Act Regulations	36 CFR Part 62	Potentially Applicable	Requires federal agencies to consider to existence and location of landmarks on the National Registry of Natural Landmarks to avoid undesirable impacts on such landmarks.	The existence of natural landmarks would be identified prior to remedial activities on site, including remedial investigations.
Fish and Wildlife Coordination Act Regulations	33 CFR Subsection 320.3	Potentially Applicable	Requires that the United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service, and related state agencies be consulted prior to structural modification of any body of water, including wetlands. If modifications must be conducted, the regulation requires that adequate protection be provided for fish and wildlife resources.	If a remedial alternative involves the alteration of a stream or wetland, these agencies would be consulted.
National Environmental Policy Act Regulations, Wetlands, Floodplains, etc.	40 CFR Subsection 6.302 [a]	Potentially Applicable	These regulations contain the procedures for complying with Executive Order 11990 on wetlands protection. Appendix A states that no remedial alternative may adversely affect a wetland if another practicable alternative is available. If no alternative is available, impacts from implementing the chosen alternative must be mitigated.	If remedial action affects a wetland, these regulations would apply.

Table 3-3
Federal Location-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 2

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
National Environmental Policy Act Regulations, Floodplain Management, Executive Order 11988	40 CFR Part 6, Appendix A	Potentially Applicable	Appendix A describes the policy for carrying out the Executive Order regarding floodplains. If no practicable alternative exists to performing cleanup in a floodplain, potential harm must be mitigated and actions taken to preserve the beneficial value of the floodplain.	If removal actions take place in a floodplain, alternatives would be considered that would reduce the risk of flood loss and restore and preserve the floodplain.
Fish and Wildlife Conservation Act	40 CFR Section 6.302	Potentially Applicable	Requires action to be taken to protect fish and wildlife from projects affecting streams or rivers.	USFWS officials would be consulted on how to minimize impacts of any remedial activities on any wildlife.

For PSC 45, soil PRGs were established based on the following criteria:

- Protection of human health from direct exposure to contaminated soil.
- Compliance with ARARs and TBCs to the extent practicable.

Accordingly, the following PRGs for soil were established:

COC	PRGs
BAPeq	100 µg/kg ⁽¹⁾
BAP	100 µg/kg ⁽¹⁾
Cadmium	7.5 mg/kg ⁽²⁾

1 FDEM SCTLs for direct residential exposure (FDEM, 2005)
2 FDEM SCTLs for leachability (FDEM, 2005)

3.6 GRAs AND ACTION-SPECIFIC ARARS

GRAs are broadly defined remedial approaches that may be used (by themselves or in combination with one or more of the others) to attain the RAO. Action-specific ARARs and TBCs are those regulations, criteria, and guidances that must be complied with or taken into consideration during remedial activities on site.

3.6.1 General Response Actions

GRAs describe categories of actions that could be implemented to satisfy or address a component of the RAOs for the site. Remedial action alternatives will then be composed using general response actions singly or in combination to meet the RAOs. The remedial action alternatives, composed of GRAs, will be capable of achieving the RAOs for each contaminated medium at the site.

The following GRAs will be considered for soil at PSC 45:

- No Action,
- Institutional Controls and Monitoring
- Limited Soil Removal with Institutional Controls and Monitoring for Residual Groundwater Impacts.

3.6.2 Action-Specific ARARs

Action-specific ARARs and TBCs are technology- or activity-based regulatory requirements or guidance that would control or restrict remedial action. Tables 3-4 and 3-5 present a list of federal and state action-specific ARARs and TBCs for this EE/CA.

Table 3-4
Federal Action-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 3

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Occupational Safety and Health Act (OSHA) Regulations, General Industry Standards	29 CFR Part 1910	Applicable	Requires establishment of programs to assure worker health and safety at hazardous waste sites, including employee training requirements.	These regulations would apply to all response activities.
OSHA Regulations, Occupational Health and Safety Regulations	29 CFR Part 1910, Subpart Z	Potentially Applicable	Establishes permissible exposure limits for workplace exposure to a specific listing of chemicals.	Standards are applicable for worker exposure to OSHA hazardous chemicals during remedial activities.
OSHA Regulations, Recordkeeping, Reporting, and Related Regulations	29 CFR Part 1904	Potentially Applicable	Provides recordkeeping and reporting requirements applicable to remedial activities.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.
OSHA Regulations, Health and Safety Standards	29 CFR Part 1926	Potentially Applicable	Specifies the type of safety training, equipment, and procedures to be used during the site investigation and remediation.	All phases of the remedial response project would be executed in compliance with this regulation.
Resource Conservation and Recovery Act (RCRA) Regulations, Contingency Plan and Emergency Procedures	40 CFR 264, Subpart D	Potentially Relevant and Appropriate	Outlines requirements for emergency procedures to be followed in case of an emergency.	The administrative requirements established in this rule would be met for remedial actions involving the management of hazardous waste.

Table 3-4
Federal Action-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 3

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
RCRA Regulations, General Facility Standards	40 CFR Subpart B, 264.10-264.18	Potentially Relevant and Appropriate	Sets the general facility requirements including general waste analysis, security measures, inspections, and training requirements. Section 264.18 establishes that a facility located in a 100-year floodplain must be designed, constructed, and maintained to prevent washout of any hazardous wastes by a 100-year flood.	If the remedial action involves construction of an on-site treatment facility, such as a groundwater treatment facility, the substantive requirements of this rule would be applicable requirements. A permitted treatment facility must be selected for off-site treatment. These regulations do not apply to the aboveground treatment or storage of hazardous waste before it is injected into underground. However, this rule may be an applicable requirement for alternatives that do not involve groundwater reinjection.
RCRA Regulations, Miscellaneous Units	40 CFR Part 264, Subpart X	Potentially Relevant and Appropriate	These standards are applicable to miscellaneous units not previously defined under existing RCRA regulations. Subpart X outlines performance requirements that miscellaneous units be designed, constructed, operated, and maintained to prevent releases to the subsurface, groundwater, and wetland that may have adverse effects on human health and the environment.	The design of proposed treatment alternatives, not specifically regulated under other subparts of RCRA, must prevent the release of hazardous constituents and future impacts on the environment. This subpart would apply to on-site construction of any treatment facility that is not previously defined under the RCRA regulation.
RCRA Regulations, Preparedness and Prevention	40 CFR Part 264, Subpart C	Potentially Relevant and Appropriate	Outlines requirements for safety equipment and spill control for hazardous waste facilities. Facilities must be designed, maintained, constructed, and operated to minimize the possibility of an unplanned release that could threaten human health or the environment.	Safety and communication equipment would be incorporated into all aspects of the remedial process and local authorities would be familiarized with site operations.

Table 3-4
Federal Action-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida
Page 3 of 3

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
RCRA Regulations, Releases from Solid Waste Management Units (SWMUs)	40 CFR Part 264, Subpart F	Potentially Relevant and Appropriate	Establishes the requirements for SWMUs at RCRA regulated treatment, storage, and disposal facilities (TSDFs). The scope of the regulation encompasses groundwater protection standards, point of compliance, compliance period, and requirements for groundwater monitoring.	These regulations would be followed for the treatment of hazardous waste.
RCRA Regulations, Standards for Owners and Operators of Hazardous Waste TSDFs	40 CFR Part 264	Potentially Relevant and Appropriate	Establishes minimum national standards defining the acceptable management of hazardous wastes for owners and operators of facilities that treat, store, or dispose of hazardous wastes.	If remedial actions involving management of RCRA wastes at an off-site (TSDF) or if RCRA wastes are managed onsite, the requirements of this rule would be followed.
RCRA Regulations, Use and Management of Containers	40 CFR Part 264, Subpart I	Potentially Relevant and Appropriate	Sets standards for the storage of containers of hazardous waste.	This requirement would apply if a remedial alternative involves the storage of a hazardous waste (i.e., contaminated groundwater) in containers, prior to treatment.

Table 3-5
State Action-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 2

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Florida Hazardous Waste Rules – October 1993	Chapter 62-730, F.A.C.	Potentially Applicable	Adopts by reference sections of the Federal hazardous waste regulations and establishes minor additions to these regulations concerning the generation, storage, treatment, transportation, and disposal of hazardous wastes.	These regulations would apply if waste on site was deemed hazardous and needed to be stored, transported, or disposed properly.
Florida Drinking Water Standards	Chapter 62-550, F.A.C.	Potentially Applicable	This rule adopts Federal primary and secondary drinking water standards.	These regulations would apply to remedial activities that have the potential to impact sources of drinking water.
Florida Wetland Application Regulations – November, 1989	Chapter 62-611, F.A.C.	Potentially Applicable	Sets requirements for discharge of domestic wastewater to wetland. This rule mainly addresses the discharge of domestic wastewater to wetlands. Discharge limits are established for biochemical oxygen demand, total suspended solids, nitrogen, and phosphorus.	This rule would be considered for remedial alternatives that would result in discharges to wetlands where these limits may be approached.
Florida Wastewater Facility Permits	Chapter 62-620, F.A.C.	Potentially Applicable	This rule establishes requirements for wastewater permits. It was published in November 1994; however, it is not effective until Florida is recognized as a "delegated" state.	Upon delegation, facilities in Florida requiring a wastewater permit will meet the permitting requirements under this rule. Upon Florida becoming a "delegated" state, facilities will be allowed to have a single permit to meet both Federal and State discharge requirements.
Florida Regulation of Stormwater Discharge – May 1993	Chapter 62-25, F.A.C.	Potentially Relevant and Appropriate	Establishes requirements for discharges of untreated stormwater to ensure protection of the surface water of the state.	Remedial actions would consider the impact of the discharge of untreated stormwater from excavation.

Table 3-5
State Action-Specific ARARs

Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 2

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Florida Groundwater Permitting and Monitoring Requirements – April 1994	Chapter 62-522, F.A.C.	Potentially Applicable	Establishes permitting and monitoring requirements for installations discharging to groundwater.	The substantive requirements of this rule would be met when discharge to groundwater is a possible remedial action. If these requirements are met under another permit, a separate discharge permit may not be required.
Florida Water Well Permitting and Construction Requirements – March 1992	Chapter 62-532, F.A.C.	Applicable	Establishes minimum standards for the location, construction, repair, and abandonment of water wells. Permitting requirements and procedures are established.	The substantive requirements for permitting would be met if remedial actions involve the construction, repair, or abandonment of monitoring, extraction, or injection wells.
Florida Rules on Hazardous Waste Warning Signs – July 1991	Chapter 62-736, F.A.C.	Applicable	Requires warning signs at National Priorities List and FDEP identified hazardous waste sites to inform the public of the presence of potentially harmful conditions.	This requirement will be met.
Florida Rules on Permits – November 1994	Chapter 62-4, F.A.C.	Potentially Applicable	Establishes procedures for obtaining permits for sources of pollution. This rule also establishes a "mixing zone" rule for facilities that discharge wastewater into the surface waters of the state.	These substantive requirements would be met during remediation. Through dilution, applying the "mixing zone" rule allows wastewater with higher concentrations of pollutants to be discharged into surface water, while still maintaining the Florida water quality standards.

3.7 ESTIMATED VALUES OF CONTAMINATED MEDIA

For remedial action purposes, preliminary volumes of contaminated soil were estimated based on the location of samples where COCs were detected in excess of PRGs.

The area of soil contaminated in excess of the FDEP SCTLs is estimated at 460 square feet (ft^2). Soil samples were collected from 0.5 to 2.5 feet, and groundwater is present at approximately 4 feet. Using depth to groundwater as the excavation depth (since clean samples were not collected below the detected exceedances of FDEP SCTLs), the total estimated volume of contaminated soil is approximately 70 cubic yards (yd^3).

4.0 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES

Several technologies and process options were evaluated to achieve the RAOs for PSC 45. Table 4-1 summarizes the technology screening process. The following is a summary of the technologies (with descriptions) retained from the technology screening process for development into removal action alternatives:

1. No Action
2. Institutional Controls and Monitoring
3. Excavation to Residential Cleanup Criteria and Off-Base Treatment and Disposal Removal

A description and detailed analysis of these alternatives are provided in the following sections.

4.1 ALTERNATIVE 1: NO ACTION

This alternative is a "walk-away" alternative that is required under CERCLA to establish a basis for comparison with other alternatives. Under this alternative, the property would be released for unrestricted use. This alternative cannot be chosen if waste remains on site.

4.1.1 Effectiveness

4.1.1.1 Overall Protection of Human Health and the Environment

Alternative 1 would not provide protection of human health and the environment. The potential for direct human and ecological exposure to contaminated soil under a future residential land use scenario would remain, leading to unacceptable risks. The potential would also continue to exist for the undetected migration of soil COCs to groundwater.

4.1.1.2 Compliance with ARARs and TBCs

Alternative 1 would not comply with chemical-specific ARARs and TBCs since no action would be taken to reduce COCs concentrations. Alternative 1 would also not comply with location-specific ARARs. Action-Specific ARARs are not applicable.

Table 4-1
Preliminary Screening of Soil Remediation Technologies and Process Options

Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 3

General Response Action	Remedial Technology	Process Option	Description	Screening Comment
No Action	None	Not applicable	No activities conducted at the site to address contamination.	Required by the NCP. Retain for baseline comparison to other technologies.
Limited Action	Land Use Controls	Active Controls: Physical Barriers/ Security Guards	Fencing, markers, warning signs, and monitoring to restrict site access.	Eliminate because of lack of space.
		Passive Controls: Deed or Land Use Restrictions	Administrative action using property deeds or other land use prohibitions to restrict future site activities.	Retain. Deed or Land Use Restrictions would prevent residential use. All soil is below industrial SCTLs.
	Monitoring	Sampling and Analysis	Sampling and analysis of soil and groundwater to evaluate migration of chemical constituents in the environment.	Retain. Any alternative that does not remove all contamination exceeding Cleanup Target Levels will require continued periodic sampling to ensure COCs are not migrating beyond the PSC 45 area.
Containment	Surface Protection	Asphalt/Multimedia Cover	Installation of an asphalt or multimedia cover to prevent direct exposure to contaminated soil and offsite migration of soil through erosion.	Eliminate because cover systems will leave the contaminated soil in place.
Removal	Bulk Excavation	Excavation	Use of construction equipment such as backhoe, front-end loader, gradeall, etc. to remove contaminated soil.	Retain. Excavation would effectively remove contaminated soil from the site
In-Situ Treatment	Biological	Anaerobic/Aerobic Treatment	Inoculation of microorganisms and nutrients to enhance naturally occurring biodegradation of COCs.	Eliminate because biodegradation is ineffective and not practical for cadmium contamination.

Table 4-1
Preliminary Screening of Soil Remediation Technologies and Process Options

Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 3

General Response Action	Remedial Technology	Process Option	Description	Screening Comment
In-situ Treatment (continued)	Physical/Chemical	Soil Flushing	Use of water or other solvents to remove COCs by flushing and collecting and treating or disposing of the contaminated fluids.	Eliminate because this process would be very difficult to control in-situ due to the distribution of contamination within the PSC 45 area.
		Dynamic Underground Stripping	Injection of steam at the periphery of the contaminated area to volatilize COCs and removal of these COCs through a centrally located extraction well.	Eliminate because of the non- or low-volatility of metals.
		Soil Vapor Extraction	Use of vacuum and possibly air sparging to volatilize COCs.	Eliminate because soil vapor extraction is not practical for cadmium contamination.
		Chemical Fixation/Solidification	Mixing of pozzolanic agents in the vadose zone to chemically fix COCs and solidify the matrix. This technology is primarily used to reduce the mobility of contaminants, but it can also be used to prepare a surface barrier for human uptake.	Eliminate because reduction in mobility of COCs is not an RAO. The use of this technology to prepare a surface barrier by in-situ application would be difficult to control due to the very heterogeneous nature of the soil.
	Thermal	Vitrification/ Radiofrequency Heating	Use of moderate to high temperature to either volatilize COCs or to fuse them into a glass matrix.	Eliminate because COCs are not particularly volatile.
Ex-Situ Treatment	Physical/Chemical	Soil Washing/Solvent Extraction	Use of water or other solvents to remove COCs by solubilizing and/or gravity-based separation of contaminated soil particles.	Eliminate from consideration because soil grain distribution of the surface soils will not allow for effective soil washing reducing contaminant volume.
		Chemical Fixation/Stabilization	Mixing of pozzolanic agents to chemically fix COCs and stabilize the soil matrix.	Eliminate from consideration because there is no evidence that the soil of concern is hazardous.

Table 4-1
Preliminary Screening of Soil Remediation Technologies and Process Options

Naval Air Station Jacksonville
Jacksonville, Florida
Page 3 of 3

General Response Action	Remedial Technology	Process Option	Description	Screening Comment
Ex-situ Treatment (Continued)	Biological	Onsite Landfarming	Spreading and tilling of contaminated soil into layers of clean surface soil to aerate and biodegrade organic COCs.	Eliminate because it would not be effective for the removal of most COCs and on-yard areas for construction of a treatment bed are very limited.
		Bioslurry Reactor/Biopile	Treatment of soil in a bioslurry reactor or biopile under controlled conditions using natural or cultured microorganisms to biodegrade organic COCs.	Eliminate because it would not be effective for the removal of inorganic COCs.
	Thermal	Incineration	Use of high temperatures to destroy COCs.	Eliminate because it would be ineffective for destroying inorganic COCs.
		Low-Temperature Thermal Desorption	Use of low to moderate temperatures to evaporate COCs and remove them from soil.	Eliminate because it would not be effective in removing inorganic COCs.
	Solids Processing	Screening	Removal/segregation of material based on size either as a means to remove associated COCs or as a preliminary process to aid in downstream treatment.	Eliminate because it would be ineffective for destroying inorganic COCs.
		Crushing/Grinding	Size reduction of wastes as a preliminary process to aid in downstream treatment.	Eliminate because it would be ineffective for destroying inorganic COCs.
Disposal	Landfill/Recycling	On Site Landfilling	Disposal of excavated soil and treatment residues in an on-site landfill.	Eliminate because of lack of space.
		Offsite Landfilling/Recycling	Disposal of excavated soil and treatment residues in an off yard permitted TSDF.	Eliminate because it would be ineffective for destroying inorganic COCs.

4.1.1.3 Long-term Effectiveness and Permanence

Alternative 1 would have no long-term effectiveness and permanence because contaminated soil would remain on site. As there would be no institutional controls to prevent residential development, the potential would exist for future unacceptable risk to human receptors. Since there would be no monitoring, the possible migration of soil COCs to groundwater would not be detected. Although COCs concentrations might eventually decrease to acceptable levels through natural attenuation, no monitoring would verify this.

4.1.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1 would not reduce toxicity, mobility, or volume of COCs through treatment since no treatment would occur. Some reduction of toxicity or volume might occur through natural dispersion, dilution, or other attenuation process but no monitoring would be performed to verify this.

4.1.1.5 Short-term Effectiveness

Since no action would occur, implementation of Alternative 1 would not pose any risks to onsite workers or result in adverse impact to the local community and the environment.

Alternative 1 would not achieve the RAOs and although the soil PRGs might eventually be achieved through natural attenuation, it would not be known when.

4.1.2 Implementability

Alternative 1 would be readily implementable since there would be nothing to implement. The technical feasibility criteria, including constructability, operability, and reliability, are not applicable. The implementability of administrative measures is not applicable since no such measures would be taken.

4.1.3 Cost

There would be no costs associated with Alternative 1.

4.2 ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING

Alternative 2 would consist of two major components: institutional controls and monitoring.

Component 1: Institutional Controls

Institutional controls would consist of limiting land use to industrial purposes. A Land Use Control (LUC) Implementation Plan (LUCIP) would be prepared and implemented to ensure that, prior to any development at PSC 45, adequate measures would be taken to minimize adverse human health and environmental effects. In particular, LUCs would prevent residential development of PSC 45. Regular site inspections would be performed to verify the continued implementation of the LUCIP.

Component 2: Monitoring

Monitoring would consist of regularly checking COCs concentrations by collecting soil samples in the areas of highest recorded contamination based on previously collected data. These samples would then be analyzed for PAHs and cadmium. Monitoring would also consist of collecting groundwater samples from existing and proposed wells in the contaminated soil and downgradient area and analyzing these samples for metals, PAHs, and VOCs.

Monitoring would be conducted for 30 years and the data would be evaluated to determine the need for additional remedial action at the site. Sampling frequency would be on a five year basis. Each sampling round would consist of advancing and sampling four soil borings and sampling two monitoring wells. Every 5 years, site reviews would be conducted to evaluate the continued adequacy of the remedial alternative. These site reviews are required because this alternative allows contaminants to remain in soil at levels that exceed PRGs.

If the 5-year site reviews indicate that COCs are migrating beyond the PSC 45 area, the site will be reevaluated at that time to determine whether excavation and disposal of all or part of the impacted soil would be necessary, or whether groundwater treatment would be necessary. Likewise, if the annual inspection of the site indicates that it is not being properly maintained causing COCs to migrate in the groundwater beyond the site, the site will also be reevaluated to determine if additional groundwater treatment or excavation of contaminated soil are required.

4.2.1 Effectiveness

4.2.1.1 Overall Protection of Human Health and the Environment

Alternative 2 would be protective of human health and the environment.

Institutional controls restricting PSC 45 to industrial use would be protective of human health by preventing unacceptable risks to future residents from direct exposure to contaminated soil.

Monitoring would be protective of the environment by detecting the potential migration of soil COCs to groundwater.

4.2.1.2 Compliance with ARARs and TBCs

Alternative 2 would not comply with Federal and State chemical-specific ARARs because COC concentrations would not actively be reduced. Chemical-specific ARARs might eventually be achieved through natural attenuation. Alternative 2 would comply with all location-, and action-specific ARARs and TBCs.

4.2.1.3 Long-term Effectiveness and Permanence

Alternative 2 would provide long-term effectiveness and permanence. Although soil COC concentrations would not actively be reduced, risks to human health and the environment would be minimized through land use restrictions.

4.2.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 2 would not reduce toxicity, mobility, or volume of COCs through treatment since no treatment would occur. Some reduction of toxicity and volume might occur through natural attenuation, and this would be verified through monitoring.

4.2.1.5 Short-term Effectiveness

Alternative 2 would have minimal short-term effectiveness concerns. Any exposure of workers to contaminated soil during the collection of soil samples and the maintenance and sampling of existing and proposed monitoring wells would be minimized by appropriate personal protection equipment (PPE) and compliance with site-specific health and safety procedures. Implementation of institutional controls and monitoring would not adversely impact the surrounding community or the environment.

The RAOs would be achieved immediately upon implementation of institutional controls and monitoring. Eventual attainment of PRGs through natural attenuation would be determined through monitoring.

4.2.2 Implementability

Alternative 2 would be easily implementable.

Maintenance of monitoring wells, sampling and analysis of soil and groundwater, and performance of regular site inspections and 5-year reviews could readily be accomplished. The resources, equipment, and materials for all these activities are readily available.

The administrative aspects of Alternative 2 would be relatively simple to implement. No construction permit would be required for this alternative.

4.2.3 Cost

The estimated costs for Alternative 2 are as follows. These costs have been rounded up to the nearest \$1,000 to reflect the preliminary nature of the estimates:

- Capital Cost: \$16,000
 - 30-Year NPW of Operation and Maintenance (O&M) Cost: \$1,000/year and \$15,000 every 5 years
 - 30-Year Net Present Worth (NPW): \$58,000

A detailed cost estimate for this alternative is provided in Appendix B.

4.3 ALTERNATIVE 3 EXCAVATION TO BELOW RESIDENTIAL CLEANUP CRITERIA AND OFF-BASE TREATMENT AND DISPOSAL

Alternative 3 would consist of two major components: 1) excavation and 2) off-base transportation and treatment and disposal.

Component 1: Excavation

Soil contaminated with concentrations of COCs in excess of the FDEP SCTLs for direct residential exposure or leachability to groundwater would be excavated. An area approximately 460 ft² in size (as shown on Figure 4-1) would be excavated down to groundwater, a depth of approximately 4 feet bgs.

This corresponds to a volume of approximately 70 yd³ of excavated material. Due to the proximity of buildings and the existing oil water separator, hand-digging would need to be the method for soil removal. Following excavation, the excavated areas would be backfilled with clean fill, graded, vegetated, and the site would be restored to pre-excavation conditions.



PARKING

Soil to be excavated
Approximately
460 sq ft



Legend

 Soil to be Excavated

20 0 20
Feet

DRAWN BY DATE
J.MADDEN 05/12/13

CHECKED BY DATE
L.SMITH 05/12/13

REVISED BY DATE



ALTERNATIVE 3 - SOIL TO BE EXCAVATED
PSC 45
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NUMBER CTO NUMBER
2686 JM19

APPROVED BY DATE

APPROVED BY DATE

FIGURE NO. REV
FIGURE 4-1 0

Component 2: Off-Base Transportation and Treatment and Disposal

The excavated soil would be transported to an off-base permitted TSDF. The exact nature and extent of the treatment required prior to disposal would be determined by the TSDF based upon actual analysis of the contaminated soil and the requirements of their permit. It is assumed that soil with higher concentrations of BAPEq would be treated with low-temperature thermal desorption (LTTD), while soil with higher concentrations of cadmium would be chemically fixated and solidified. A certain portion of the soil might require both treatments while another portion might not require any treatment prior to disposal. As may be required by the TSDF, bench-scale treatability tests would be performed to determine optimum treatment.

The treated soil would then be disposed of. It is assumed that the treated soil would be non-hazardous and would be disposed of in a RCRA Subtitle D type landfill. Samples of the treated soil would be collected and analyzed to ensure that the soil complies with the TSDF landfill permit.

4.3.1 Effectiveness

4.3.1.1 Overall Protection of Human Health and the Environment

Alternative 3 would be protective of human health and the environment.

Excavation of soil contaminated in excess of residential cleanup criteria would minimize the potential for unacceptable human health risk as a result of exposure to contaminated soil. Excavation of contaminated soil would also minimize the potential for soil COCs to migrate to the groundwater.

Off-base treatment and disposal of the excavated soil at a permitted TSDF would protect human health and the environment. Some short-term risks could be incurred by workers from exposure to contaminated soil and thermal desorption off gas during on site remedial activities. The potential for exposure would be minimized by the implementation of engineering controls (e.g., dust suppression, off gas treatment), the wearing of appropriate PPE, and compliance with OSHA regulations and site-specific health and safety procedures. Any potential negative short-term impacts to the surrounding community and environment from fugitive emissions and/or spillage of contaminated soil could be minimized through the implementation of appropriate engineering controls (e.g., off gas treatment, perimeter air monitoring, spill prevention procedures, etc.).

4.3.1.2 Compliance with ARARs and TBCs

Alternative 3 would comply with chemical-, location-, and action-specific ARARs and TBCs.

4.3.1.3 Long-term Effectiveness and Permanence

Alternative 3 would provide long-term effectiveness and permanence.

Excavation of soil with COC concentrations in excess of the FDEP SCTLs for direct residential exposure would effectively eliminate the potential for unacceptable human health risk in case of residential development of the site. Excavation would also effectively minimize the potential for COCs migration from soil to groundwater. Off-base treatment and disposal would effectively minimize any adverse impact from contaminated soil on human health and the environment.

4.3.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 3 would reduce toxicity, mobility, and volume of contaminants through treatment. Approximately 70 yd³ of contaminated soil would be removed from PSC 45 by this alternative. Toxicity and mobility of COCs would be reduced in that portion of the excavated soil that would be treated by LTTD and mobility of COCs would be reduced in that portion of the soil that would be treated by chemical fixation/solidification.

4.3.1.5 Short-term Effectiveness

Implementation of the excavation and off-base treatment and disposal components of Alternative 3 could expose construction workers to contaminated soil. This potential for exposure would be minimized by the implementation of engineering controls, such as dust suppression, and air quality monitoring. The potential for worker exposure would be further reduced by the wearing of appropriate PPE, and compliance with applicable OSHA regulations and proper site-specific health and safety procedures.

Implementation of the excavation, treatment, and off-site disposal components are not expected to adversely impact either the surrounding community or the environment. Measures such as spill prevention and containment, erosion and sedimentation control, perimeter air monitoring, and traffic control would be taken to insure that the impact remains acceptable.

Alternative 3 could be completed in approximately 2 months and would achieve the RAOs and attain the soil PRGs at completion.

4.3.2 Implementability

Alternative 3 would be easily implementable.

The excavation component of this alternative could be performed by hand digging with normal construction equipment, resources, equipment, and materials that would be readily available for this purpose. Since the excavation would be limited to 4 feet bgs the need for shoring and dewatering would be minimal, although care would have to be taken not to undermine the foundations of existing buildings. Other existing site structures such as parking lots and utility lines would be removed or moved, if possible, and restored or replaced after excavation.

Permitted TSDFs with soil treatment and non-hazardous landfilling capabilities are available which would make implementation of this alternative relatively easy.

The administrative aspects of Alternative 3 would be relatively simple to implement. A construction permit would have to be obtained. The off-site transportation and disposal of the excavated soil would require the completion of relatively numerous administrative procedures which, while constituting a significant effort, could readily be accomplished.

4.3.3 Cost

The estimated costs for Alternative 3 are as follows:

- Capital Cost: \$ 130,000
- NPW of O&M Cost: \$ 0
- NPW: \$ 130,000

A detailed cost estimate for this alternative is provided in Appendix B.

5.0 COMPARATIVE ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

This section compares the analyses that were presented for each of the remedial alternatives in Section 4.0 of this EE/CA. The criteria for comparison are identical to those used for the detailed analysis of individual alternatives.

5.1 COMPARISON OF SOIL REMEDIAL ALTERNATIVES BY CRITERIA

The following remedial alternatives for soil are being compared in this section:

1. No Action
2. Institutional Controls and Monitoring
3. Excavation to Residential Cleanup Criteria and Off-Base Treatment and Disposal

5.1.1 Overall Protection of Health and Environment

Alternative 1 would not provide protection of human health and the environment because the potential would remain for residential development that would result in an unacceptable risk due to direct exposure of human and ecological receptors to contaminated soil. The major threat from soil contamination at PSC 45 would be the migration of soil COCs to the groundwater and, since no monitoring would be performed, this migration would remain unknown.

Alternative 2 would be protective of human health and the environment. Institutional controls would provide protection by preventing residential development. Monitoring would provide protection by detecting potential migration of soil COCs to the groundwater. Some potentially adverse ecological risk would remain because of residual metals and PAH contamination in the soil.

Alternative 3 would be the most protective alternative. All of the soil contaminated above residential PRGs and essentially all of the soil contaminated above the ecological screening criteria would be excavated and taken to an off-base permitted TSDF for treatment and disposal.

5.1.2 Compliance with ARARs and TBCs

Alternative 1 would not comply with chemical-specific ARARs. No action-specific ARARs or TBCs apply to this alternative.

Alternative 2 would not comply with chemical-specific ARARs and TBCs because COC concentrations would not actively be reduced. Chemical-specific ARARs might eventually be achieved through natural attenuation. Alternative 2 would comply with all location- and action-specific ARARs and TBCs.

Alternative 3 would comply with State and Federal chemical-, location-, and action-specific ARARs and TBCs.

5.1.3 Long-term Effectiveness and Permanence

Alternative 1 would have very limited long-term effectiveness and permanence because contaminated soil would remain on site. Since there would be no institutional controls to prevent residential development, the potential would continue to exist for unacceptable risk to develop for possible future residents. Residential development at PSC 45 could also result in unacceptable risk to a correspondingly increased population of ecological receptors from exposure to contaminated soil. Since there would be no monitoring, potential migration of soil COCs to groundwater would go undetected.

Alternative 2 would provide long-term effectiveness and permanence provided leaching does not occur. Institutional controls including prevention of residential development would effectively and permanently reduce the risk from direct exposure of human and ecological receptors to contaminated soil. Long-term monitoring would be effective for the detection of potential migration of soil COCs to the groundwater.

Alternative 3 would offer the best long-term effectiveness and permanence. Soil contaminated above the residential PRGs would be excavated and taken to a permitted off-base TSDF. These remedial actions would effectively and permanently eliminate the risk from direct exposure to contaminated soil and the potential for soil COCs to migrate to the groundwater.

5.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1 would not achieve reduction of toxicity, mobility, or volume of contaminants through treatment. This alternative might achieve some reduction of contaminant toxicity and volume through natural processes but this would not be verified through monitoring.

Alternative 2 would not reduce contaminant toxicity, mobility, and volume through treatment because no treatment would occur. Some reduction in toxicity and volume might occur through natural attenuation and this would be verified through monitoring.

Alternative 3 would best reduce contaminant toxicity, mobility, and volume through treatment. Alternative 3 would remove approximately 70 yd³ of contaminated soil. The excavation of contaminated

soil at PSC 45 would permanently reduce the volume of the COCs. Off-base treatment and disposal would reduce toxicity and mobility.

5.1.5 Short-term Effectiveness

Implementation of Alternative 1 would not result in risks to site workers or adversely impact the surrounding community or environment since no remedial activities would be performed. Alternative 1 would not achieve the RAOs, although the soil PRGs might eventually be achieved over time through natural processes, this would not be verified through monitoring.

Alternative 2 would have minimal short-term effectiveness concerns. Any exposure of workers to contaminated soil during the collection of soil samples and the maintenance and sampling of existing and proposed monitoring wells would be minimized by appropriate PPE and compliance with site-specific health and safety procedures. Implementation of institutional controls and monitoring would not adversely impact the surrounding community or the environment. The RAOs would be achieved immediately upon implementation of institutional controls and monitoring. Eventual attainment of PRGs through natural attenuation would be determined through monitoring.

Implementation of Alternative 3 would result in a significant possibility of exposing construction workers to contaminated soil during the excavation and off-base transportation, treatment, and disposal activities. However, all these risks of exposure would be effectively controlled by the implementation of engineering controls (e.g., dust suppression, off gas treatment), by the wearing of appropriate PPE, and by compliance with applicable OSHA regulations and proper site-specific health and safety procedures. With the implementation of Alternative 3, there will be a slight risk to the surrounding community during the transportation of the contaminated soil to the off-base TSDF. This risk would be controlled through adherence to Department of Transportation regulations and implementation of traffic control and spill prevention measures. Alternative 3 would achieve the RAO and PRGs within approximately two months.

5.1.6 Implementability

Alternative 1 would be very simple to implement since no action would occur. The technical feasibility criteria, including constructability, operability, and reliability, are not applicable. The implementation of administrative measures is not applicable because no such measures would be taken.

Alternative 2 would be readily implementable. Maintenance of monitoring wells, sampling and analysis of soil and groundwater, and performance of regular site inspections and 5-year reviews could readily be accomplished. The resources, equipment, and materials required for all these activities are readily available. The administrative aspects of Alternative 2 would be relatively simple to implement. No

construction permit would be required for this alternative. Appropriate provisions will be incorporated into the LUCIP to ensure continued implementation of land use restrictions and monitoring.

Alternative 3 would be relatively easy to implement. Technically, the necessary resources are readily available for the excavation of contaminated soil and existing off-base TSDFs could receive, treat, and dispose this soil. Long-term institutional controls and monitoring would also be easy to implement. Administratively, implementation of Alternative 3 would require a construction permit for soil excavation, manifesting and TSDF acceptance of the excavated soil. Administratively, Alternative 3 would be simple to implement because it would not require long-term institutional controls and monitoring.

5.1.7 Cost

The capital and O&M costs and NPW of the soil alternatives are as follows. Costs have been rounded to the nearest \$1,000 to reflect the preliminary nature of the estimates. Detailed cost estimates are provided in Appendix B.

<u>Alternative</u>	<u>Capital (\$)</u>	<u>NPW of O&M (\$)</u>	<u>NPW (\$)</u>
1	0	0	0
2	16,000	42,000	58,000
4	130,000	0	130,000

5.2 SUMMARY OF COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES

Table 5-1 summarizes the comparative analysis of the three soil remedial alternatives.

Table 5-1
Comparative Analysis of Remedial Action Alternatives

Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 2

Evaluation Criteria	Alternative 1: No Action	Alternative 2: Institutional Controls and Monitoring	Alternative 3: Excavation and Off-Base Treatment and Disposal
Overall Protection of Human Health and Environment	Would not be protective of human health and the environment because the threats of direct human and ecological exposure to contaminated soil and soil COCs migrating to the groundwater would remain.	Would be protective of the environment by preventing residential development and detecting the migration of soil COCs	Would be most protective by eliminating the risk of exposure to soil contaminated above SCTLs for direct residential exposure and minimizing the potential for migration of COCs to groundwater
Compliance with ARARs and TBCs: Chemical-Specific Location Specific Action-Specific	Would not comply Would not comply Not applicable	Would not comply Would comply Would comply	Would comply Would comply Would comply
Long-term Effectiveness and Permanence	Would have no long-term effectiveness and permanence since all contaminants would remain on-site. Any long-term effectiveness would not be known since monitoring would not occur.	Would be long-term effective and permanent. The prevention of residential development through deed restrictions and the monitoring of contaminants to evaluate their migration would provide long-term effectiveness and permanence.	Would provide the most long-term effectiveness and permanence. Risks from exposure to soil contaminated above the SCTLs for direct residential exposure and from potential migration of contaminants would be effectively and permanently eliminated through excavation, treatment, and disposal.
Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment	Would not achieve reduction of toxicity, mobility, or volume of contaminants through treatment but may achieve some reduction through natural processes.	Would not achieve reduction of toxicity, mobility, or volume of contaminants through treatment but may achieve some reduction through natural processes.	Would remove 70 yd ³ of contaminated soil. Treatment would reduce mobility and toxicity.

Table 5-1
Comparative Analysis of Remedial Action Alternatives

Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 2

Evaluation Criteria	Alternative 1: No Action	Alternative 2: Institutional Controls and Monitoring	Alternative 3: Excavation and Off-Base Treatment and Disposal
Short-term Effectiveness	Would not result in short-term risks to site workers or adversely impact the surrounding community but would also not achieve RAOs through treatment.	Would result in slight risk to site workers during sampling of the soil and groundwater. This risk would be reduced through the wearing of appropriate PPE and the compliance with site-specific health and safety procedures. RAOs would be achieved immediately upon implementation. Eventual compliance with PRGs would be determined through monitoring.	Would result in a significant risk of exposure to site workers to contaminated soil during the excavation, treatment, and disposal activities. This risk would be reduced through wearing of appropriate PPE and compliance with site-specific health and safety procedures. The RAOs would be achieved immediately upon implementation. PRGs would be attained within 2 months.
Implementability	Would be simple to implement since no action would occur.	Would be easy to implement since the resources, materials, and equipment are readily available.	Would be more difficult to implement since contaminated soil would have to be excavated and transported off-base for treatment and disposal. No institutional controls or monitoring would be required. A construction permit and manifesting would also be required.
Costs:			
Capital	\$0	\$16,000	\$130,000
Average Yearly O&M	\$0	\$ 1,000	\$ 0
Average 5 Year Cost	\$0	\$15,000	\$ 0
NPW	\$0	\$58,000	\$ 130,000

6.0 RECOMMENDED REMEDIAL ACTION ALTERNATIVE

This section provides a recommendation for selection of an alternative to address soil contamination identified at PSC 45. As presented in the previous sections, the alternatives evaluated include:

- Alternative 1: No Action
- Alternative 2: Institutional Controls and Monitoring
- Alternative 3: Excavation to Residential Cleanup Criteria and Off-Base Treatment and Disposal

It is not acceptable to select the No Action alternative; it is used only for comparison. Alternatives 2 and 3 are both technically feasible and environmentally acceptable. Alternative 2 is less expensive, but Alternative 3 will permit unrestricted use of the site.

It is anticipated the area of PSC 45 will continue to have industrial use for the foreseeable future. Implementing Alternative 3, however, would maximize the likelihood the groundwater would clean up over time through natural attenuation processes. For this reason, Alternative 3, excavating contaminated soil exceeding residential cleanup criteria with off-base treatment and disposal is the recommended alternative for this remedial action.

REFERENCES

ABB-ES (ABB Environmental Services, Inc.), 1995. *Naval Installation Restoration Program Plan, Volume 7, Remedial Investigation and Feasibility Study Work and Project Management Plan, Operable Unit 3 (OU 3)*, NAS Jacksonville, Jacksonville, Florida. Prepared for Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGC), North Charleston, South Carolina. March.

ABB-ES, 1996. *Remedial Investigation and Feasibility Study for Operable Unit 1*, Naval Air Station Jacksonville, Florida. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. March.

ATSDR (Agency for Toxic Substances and Disease Registry), 1989. Toxicological Profile for Benzo(a)pyrene. Atlanta, Georgia. April.

ATSDR, 1997. Toxicological Profiles on CD-ROM. U.S. Public Health Service, Atlanta, Georgia.

Buchman, M. F., 2008. *NOAA Screening Quick Reference Tables*. NOAA OR&R Report 08-1, Seattle, Washington, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration, 34 pages. <http://response.restoration.noaa.gov/cpr/sediment/squirt/squirt.html>.

Department of Defense, 2010. *Department of Defense Quality Systems Manual for Environmental Laboratories*. Version 4.2. October.

Dragun, James, 1988. *The Soil Chemistry of Hazardous Materials*, Hazardous Materials Control Research Institute, Silver Spring, Maryland.

Fairchild, R. W., 1972. *The Shallow-Aquifer System in Duval County, Florida*: Florida Bureau of Geology Report of Investigation No. 59.

FDEP (Florida Department of Environmental Protection), 2004. *Guidance for the Selection of Analytical Methods for the Evaluation of Practical Quantitation Limits*. October.

FDEP, 2005. *Final Technical Report: Development of Cleanup Target Levels (CTLs) For Chapter 62-777, Florida Administrative Code (F.A.C.)*. Prepared for the Division of Waste Management Florida Department of Environmental Protection By Center for Environmental & Human Toxicology University of Florida Gainesville, Florida. February.

FDEP, 2008. *Standard Operating Procedures for Field Activities*. DEP-SOP-001/01. December.

FDEP, 2012. Chapter 62-302.530, F.A.C., *Criteria for Surface Water Quality Classifications* (Class III). Web search performed on December 5, 2012. Available at <http://www.dep.fl.us/water/wqssp/classes.htm>.

Ford, K. and P. Gurba, 1984. Methods of Determining Relative Contaminant Mobilities and Migration Pathways Using Physical-Chemical Data.

Geraghty and Miller, Inc., 1991. *Navy Installation Restoration Program Plan, Naval Air Station, Jacksonville, Florida, Volume 1, Organization and Planning*. September.

Gibbons, J. A., and M. Alexander, 1989. Microbial Degradation of Sparingly Soluble Organic Chemicals: Phthalate Esters in Environmental Toxicology and Chemistry, Volume 8, pp. 283-291.

Howard, P. H., 1989. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume 1. Large Production and Priority Pollutants*. Lewis Publishers, Inc., Chelsea, Michigan.

Howard, P. H., 1990. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume 2. Solvents*. Lewis Publishers, Inc., Chelsea, Michigan.

Hazardous Substances Data Bank, 2006. Toxicology Data Network (TOXNET), United States National Library of Medicine, National Institutes of Health.

Available at <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>.

Laskowski, D. A., C. A. Goring, P. S. McCall, and R. L Swann, 1983. *Environmental Risk Analysis for Chemicals*. Van Nostrand Reinhold Company, New York, New York.

Leve, G. W., 1966. *Groundwater in Duval and Nassau Counties, Florida*: Bureau of Geology Report of Investigation No. 43.

Lyman, W. J., W. F. Reehl, and D. H. Rosenblatt, 1990. *Handbook of Chemical Property Estimation Methods*. American Chemical Society, Washington D. C.

Mabey, W. R., J. H. Smith, R. T. Podoll, H. L. Johnson, T. Mill, T. W. Chou, J. Gates, I. W. Partridge, H. Jaber, and D. Vandenberg, 1982. Aquatic Fate Process Data for Organic Priority Pollutants. USEPA Report No. 440/4-81-014. December.

NAS Jacksonville, 1990. *Federal Facilities Agreement Site Management Plan*. November.

Navy, 1999. Navy Policy for Conducting Ecological Risk Assessments. Office of the Chief of Naval Operations, Washington, D.C. April.

Sample, B. E., M. S. Alpin, R. A. Efroymson, G. W. Suter II, and C. J. E. Welsh, 1997. *Methods and Tools for Estimation of the Exposure of Terrestrial Wildlife to Contaminants*. ORNL/TM-13391. Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Scott, T. M., 1988. *The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida*: Florida Geological Survey Bulletin No. 59.

Tetra Tech, 2004. *Naval Installation Restoration Program Plan Remedial Response Decision System, Volume 2, Appendix D, Revision 2*. Prepared for Naval Facilities Engineering Command, Jacksonville, Florida. November.

Tetra Tech, 2011a. *Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Remedial Investigation for Potential Source of Contamination (PSC) 45, Former Building 200 Wash Rack Disposal Pit*, Naval Air Station Jacksonville, Florida. May.

Tetra Tech, 2011b. *Site Investigation Report for Potential Source of Contamination 45, Building 200 Wash Rack*. Naval Air Station Jacksonville, Jacksonville, Florida. July.

Tetra Tech, 2013. *Remedial Investigation Report for Potential Source of Contamination 45*. Naval Air Station Jacksonville, Jacksonville, Florida. June.

Toth, D. J., 1990. *Geohydrologic Summary of the Floridan Aquifer in Coastal Areas of Nassau, Duval, and Northern St. Johns Counties*: St. Johns River Water Management District Technical Publication SJ 90-5, Palatka, Florida.

United States Department of Agriculture, 1978. *Soil Survey of City of Jacksonville, Duval County*.

USEPA (United States Environmental Protection Agency), 1979. Water-Related Environmental Fate of 129 Priority Pollutants. EPA/440/4-79/029, Washington, D.C. December.

USEPA, 1982. Aquatic Fate Process Data for Organic Priority Pollutants, Office of Water Regulations and Standards, Washington, D.C. December.

USEPA, 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. EPA/540/G-89/004. OSWER Directive 9355.3-01. October.

USEPA, 1992. *Handbook for RCRA Groundwater Monitoring Constituents: Chemical and Physical Properties*.

USEPA, 1996. *ECO Update, Ecotox Thresholds*. Volume 3, Number 2, USEPA 540/F-95/038, Office of Emergency and Remedial Response, Washington, D.C. January.

USEPA, 1997. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments*. Office of Solid Waste and Emergency Response, EPA 540-R-97-006. June.

USEPA, 1999. *Contract Laboratory Program National Functional Guidelines for Organics Data Review*. EPA540/R-99/008. Office of Emergency and Remedial Response, Washington, DC. October.

USEPA, 2000. *Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment, Status and Needs*. EPA-823-R-00-001, Office of Water, Washington, D.C. February.

USEPA, 2001. *Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment*. Waste Management Division, Atlanta, Georgia. Originally published November 1995. Website version last updated November 30, 2001.

Available at <http://www.epa.gov/region4/superfund/programs/riskassess/otsguid.html>.

USEPA, 2004a. *Contract Laboratory Program National Functional Guidelines for Inorganics Data Review*. EPA 540-R-04-004. OSWER 9240.1-45. Office of Superfund Remediation and Technology Innovation. October.

USEPA, 2004b. *User's Guide For Evaluating Subsurface Vapor Intrusion Into Buildings*. Office Of Emergency And Remedial Response, Washington, D.C. February.

Available at http://www.epa.gov/oswer/riskassessment/airmodel/pdf/2004_0222_3phase_users_guide.pdf

USEPA, 2006. *EPA Region III BTAG Marine Screening Benchmarks*. Mid-Atlantic Risk Assessment, Screening Values. July.

Available at <http://www.epa.gov/reg3hwmd/risk/eco/btag/sbv/marine/screenbench.htm>.

USEPA, 2008. *Human Health Risk Assessment Bulletins-- Supplement to RAGS*. September. Available at <http://www.epa.gov/region4/superfund/programs/riskassess/healtbl.html>.

USEPA, 2009. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment) Final*. EPA-540-R-070-002. Office of Superfund Remediation and Technology Innovation, Washington, D.C. January.

USEPA, 2012a. Regional Screening Levels for Chemical Contaminants at Superfund Sites. RSL Table Update. May.

Available at http://www.epa.gov/reg3hscd/risk/human/rb-concentration_table/Generic_Tables/index.htm.

USEPA, 2012b. 2012 Edition of the Drinking Water Standards and Health Advisories. Office of Water, Washington, D.C. EPA 822-R-09-011. April.

USEPA, 2012c. Superfund Chemical Data Matrix. Website visited on December 14, 2012: <http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm>.

USGS (United States Geological Survey), 1993. *Orange Park Quadrangle, Duval County, Florida, 7.5 Minute Series (topographic)*. United States Department of the Interior Geological Survey.

USGS, 1998. *Groundwater Hydrology and Simulation of Groundwater Flow at Operable Unit 3 and Surrounding Region*, U.S. Naval Air Station, Jacksonville, Florida. United States Geological Survey, Open File Report 98-68.

USGS, 2002. *Fate and Transport Modeling of Selected Chlorinated Compounds at Hangar 1000*, Naval Air Station, Jacksonville, Florida.

Weyl, Peter K., 1970. *Oceanography: An Introduction to the Marine Environment*. J. Wiley and Sons, Inc. Publishers. April.

APPENDIX A

ANALYTICAL LABORATORY RESULTS

Table A-1
Summary of Phase I Groundwater Analytical Results

Remedial Investigation Report, PSC 45
 Naval Air Station Jacksonville

Jacksonville, Florida
 Page 1 of 7

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA TAP RSL	JAX45-B200- MW01D	JAX45-B200- MW01S	JAX45-B200- MW02D	JAX45-B200- MW02S
					JAX-45-B200- MW01D- 20110504	JAX-45-B200- MW01S- 20110504	JAX-45-B200- MW02D- 20110504	JAX-45-B200- MW02S- 20110504
					20110504	20110504	20110504	20110504
METALS (µg/L)								
ALUMINUM	200	GCTL	200	16000	218 J	251 J	2420	58.7 J
ANTIMONY	6	GCTL	6	6	1.28 U	1.28 U	1.28 U	1.3 U
ARSENIC	0.045	RSL	10	0.045	1.43 U	1.7 J	1.43 U	8.2
BARIUM	2000	GCTL	2000	2900	34.2	20.3	37.6	32.8
BERYLLIUM	4	GCTL	4	16	0.1 U	0.1 U	0.1 U	0.1 U
CADMIUM	5	GCTL	5	6.9	0.05 U	0.05 U	0.05 U	0.05 U
CALCIUM	NC	GCTL	NC	NC	8760	96600	32900	8420
CHROMIUM	100	GCTL	100	NC	0.88 J	2.6 J	6 J	0.36 U
COBALT	4.7	RSL	140	4.7	3.7 J	0.39 J	0.74 J	8.7 J
COPPER	620	RSL	1000	620	0.63 U	1.5 J	3.5 J	0.63 U
IRON	300	GCTL	300	11000	1210	4860	7720	19800
LEAD	15	GCTL	15	NC	1.07 U	1.1 J	2.4 J	1.07 U
MAGNESIUM	NC	GCTL	NC	NC	2050	5850	11500	2310
MANGANESE	50	GCTL	50	320	160	231	104	179
MERCURY	0.63	RSL	2	0.63	0.01 U	0.01 U	0.03 J	0.01 U
NICKEL	100	GCTL	100	300	1.6 J	0.64 J	2.5 J	0.71 J
POTASSIUM	NC	GCTL	NC	NC	1190	5490	2710	1410
SELENIUM	50	GCTL	50	78	2.36 U	2.36 U	3 J	2.36 U
SILVER	71	RSL	100	71	0.27 U	0.27 U	0.27 U	0.43 J
SODIUM	160000	GCTL	160000	NC	9220	8520	3770	8160
THALLIUM	0.16	RSL	2	0.16	1.07 U	1.07 U	1.07 U	1.07 U
VANADIUM	49	GCTL	49	78	0.29 J	1.1 J	5.2 J	0.23 U

Table A-1
Summary of Phase I Groundwater Analytical Results

Remedial Investigation Report, PSC 45
 Naval Air Station Jacksonville
 Jacksonville, Florida
 Page 2 of 7

LOCATION	PAL	PAL Source	Florida GCTL	USEPA TAP RSL	JAX45-B200- MW01D	JAX45-B200- MW01S	JAX45-B200- MW02D	JAX45-B200- MW02S
					JAX-45-B200- MW01D- 20110504	JAX-45-B200- MW01S- 20110504	JAX-45-B200- MW02D- 20110504	JAX-45-B200- MW02S- 20110504
					20110504	20110504	20110504	20110504
METALS (µg/L)								
ZINC	4700	RSL	5000	4700	17.5 J	11.7 J	5.7 J	11.6 J
PCBS (µg/L)					NC			
AROCLOR-1016	0.96	RSL	NC	0.96	0.15 U	0.16 U	0.14 U	0.15 U
AROCLOR-1221	0.0043	RSL	NC	0.0043	0.2 U	0.22 U	0.19 U	0.21 U
AROCLOR-1232	0.0043	RSL	NC	0.0043	0.091 U	0.096 U	0.086 U	0.092 U
AROCLOR-1242	0.034	RSL	NC	0.034	0.18 U	0.19 U	0.17 U	0.18 U
AROCLOR-1248	0.034	RSL	NC	0.034	0.2 U	0.22 U	0.19 U	0.21 U
AROCLOR-1254	0.034	RSL	NC	0.034	0.084 U	0.088 U	0.079 U	0.084 U
AROCLOR-1260	0.034	RSL	NC	0.034	0.17 U	0.18 U	0.16 U	0.18 U
PETROLEUM HYDROCARBONS (µg/L)								
TPH (C08-C40)	5000	GCTL	5000	NC	140 U	12000	140 U	310 J
POLYCYCLIC AROMATIC HYDROCARBONS (µg/L)								
1-METHYLNAPHTHALENE	0.97	RSL	28	0.97	0.069 U	12	0.069 U	0.065 U
2-METHYLNAPHTHALENE	27	RSL	28	27	0.078 U	9.3	0.078 U	0.074 U
ACENAPHTHENE	20	GCTL	20	400	0.065 U	0.085 J	0.065 U	0.062 U
ACENAPHTHYLENE	210	GCTL	210	400	0.054 U	0.056 U	0.054 U	0.052 U
ANTHRACENE	1300	RSL	2100	1300	0.044 U	0.045 U	0.044 U	0.042 U
BENZO(A)ANTHRACENE	0.029	RSL	0.05	0.029	0.046 U	0.047 U	0.046 U	0.14 J
BENZO(A)PYRENE	0.0029	RSL	0.2	0.0029	0.067 U	0.068 U	0.16 J	0.063 U
BENZO(B)FLUORANTHENE	0.029	RSL	0.05	0.029	0.09 U	0.092 U	0.09 U	0.086 U
BENZO(G,H,I)PERYLENE	87	RSL	210	87	0.066 U	0.067 U	0.066 U	0.062 U
BENZO(K)FLUORANTHENE	0.29	RSL	0.5	0.29	0.049 U	0.05 U	0.049 U	0.047 U

Table A-1
Summary of Phase I Groundwater Analytical Results

Remedial Investigation Report, PSC 45
 Naval Air Station Jacksonville

Jacksonville, Florida
 Page 3 of 7

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA TAP RSL	JAX45-B200- MW01D	JAX45-B200- MW01S	JAX45-B200- MW02D	JAX45-B200- MW02S
					JAX-45-B200- MW01D- 20110504	JAX-45-B200- MW01S- 20110504	JAX-45-B200- MW02D- 20110504	JAX-45-B200- MW02S- 20110504
					20110504	20110504	20110504	20110504
POLYCYCLIC AROMATIC HYDROCARBONS (µg/L)								
CHRYSENE	2.9	RSL	4.8	2.9	0.036 U	0.037 U	0.036 U	0.035 U
DIBENZO(A,H)ANTHRACENE	0.0029	RSL	0.005	0.0029	0.071 U	0.072 U	0.071 U	0.067 U
FLUORANTHENE	280	GCTL	280	630	0.074 U	0.075 U	0.074 U	0.07 U
FLUORENE	280	RSL	280	220	0.062 U	0.081 J	0.062 U	0.059 U
INDENO(1,2,3-CD)PYRENE	0.029	RSL	0.05	0.029	0.052 U	0.054 U	0.052 U	0.05 U
NAPHTHALENE	0.14	RSL	14	0.14	0.065 U	52	0.065 U	0.062 U
PHENANTHRENE	87	RSL	210	87	0.052 U	0.052 U	0.052 U	0.049 U
PYRENE	87	RSL	210	87	0.06 U	0.061 U	0.06 U	0.057 U
SEMIVOLATILES (µg/L)								
1,1-BIPHENYL	0.5	GCTL	0.5	0.83	2.7 U	3.4 J	2.7 U	2.6 U
2,2'-OXYBIS(1-CHLOROPROPANE)	0.31	RSL	0.5	0.31	2.1 U	2.2 U	2.1 U	2 U
2,4,5-TRICHLOROPHENOL	1	GCTL	1	890	3.6 U	3.7 U	3.6 U	3.5 U
2,4,6-TRICHLOROPHENOL	3.2	GCTL	3.2	3.5	2.7 U	2.8 U	2.7 U	2.6 U
2,4-DICHLOROPHENOL	0.3	GCTL	0.3	35	3 U	3.1 U	3 U	2.9 U
2,4-DIMETHYLPHENOL	140	GCTL	140	270	4.4 U	12	4.4 U	4.2 U
2,4-DINITROPHENOL	14	GCTL	14	30	1 U	1 U	1 U	0.96 U
2,4-DINITROTOLUENE	0.05	GCTL	0.05	0.2	2.2 U	2.3 U	2.2 U	2.1 U
2,6-DINITROTOLUENE	0.05	GCTL	0.05	15	2 U	2.1 U	2 U	1.9 U
2-CHLORONAPHTHALENE	550	RSL	560	550	2.9 U	3 U	2.9 U	2.8 U
2-CHLOROPHENOL	35	GCTL	35	71	3.2 U	3.3 U	3.2 U	3.1 U
2-METHYLPHENOL	35	GCTL	35	720	3.8 U	3.9 U	3.8 U	3.6 U
2-NITROANILINE	21	GCTL	21	150	1.8 U	1.8 U	1.8 U	1.7 U

Table A-1
Summary of Phase I Groundwater Analytical Results

Remedial Investigation Report, PSC 45
 Naval Air Station Jacksonville
 Jacksonville, Florida
 Page 4 of 7

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA TAP RSL	JAX45-B200- MW01D	JAX45-B200- MW01S	JAX45-B200- MW02D	JAX45-B200- MW02S
					JAX-45-B200- MW01D- 20110504	JAX-45-B200- MW01S- 20110504	JAX-45-B200- MW02D- 20110504	JAX-45-B200- MW02S- 20110504
					20110504	20110504	20110504	20110504
SEMIVOLATILES (µg/L)								
2-NITROPHENOL	NC	GCTL	NC	NC	2.7 U	2.8 U	2.7 U	2.6 U
3&4-METHYLPHENOL	NC	GCTL	NC	NC	5.6 U	5.8 U	5.6 U	5.4 U
3,3'-DICHLOROBENZIDINE	0.08	GCTL	0.08	0.11	1.1 U	1.1 U	1.1 U	1 U
3-NITROANILINE	1.7	GCTL	1.7	NC	1.5 U	1.5 U	1.5 U	1.4 U
4,6-DINITRO-2-METHYLPHENOL	1.2	RSL	NC	1.2	2 U	2.1 U	2 U	1.9 U
4-BROMOPHENYL PHENYL ETHER	NC	GCTL	NC	NC	1.9 U	2 U	1.9 U	1.8 U
4-CHLORO-3-METHYLPHENOL	63	GCTL	63	1100	3.6 U	3.7 U	3.6 U	3.5 U
4-CHLOROANILINE	0.32	RSL	28	0.32	1.9 U	2 U	1.9 U	1.8 U
4-CHLOROPHENYL PHENYL ETHER	NC	GCTL	NC	NC	2.2 U	2.3 U	2.2 U	2.1 U
4-NITROANILINE	1.7	GCTL	1.7	3.3	1.6 U	1.6 U	1.6 U	1.5 U
4-NITROPHENOL	56	GCTL	56	NC	1.8 UJ	1.8 UJ	1.8 UJ	1.7 UJ
ACETOPHENONE	700	GCTL	700	1500	3.9 U	4 U	3.9 U	3.8 U
ATRAZINE	0.26	RSL	3	0.26	3.3 UJ	3.4 UJ	3.3 UJ	3.2 UJ
BENZALDEHYDE	700	GCTL	700	1500	1 UJ	1 UJ	1 UJ	0.96 UJ
BIS(2-CHLOROETHOXY)METHANE	47	RSL	NC	47	2.1 U	2.2 U	2.1 U	2 U
BIS(2-CHLOROETHYL)ETHER	0.012	RSL	0.03	0.012	2 U	2.1 U	2 U	1.9 U
BIS(2-ETHYLHEXYL)PHTHALATE	0.071	RSL	6	0.071	1.7 U	1.8 U	1.7 U	1.6 U
BUTYL BENZYL PHTHALATE	14	RSL	140	14	1.9 U	2 U	1.9 U	1.8 U
CAPROLACTAM	7700	RSL	NC	7700	0.4 U	0.41 U	0.4 U	0.38 U
CARBAZOLE	1.8	GCTL	1.8	NC	2.1 U	2.2 U	2.1 U	2 U
DIBENZOFURAN	5.8	RSL	28	5.8	1.6 U	1.6 U	1.6 U	1.5 U
DIETHYL PHTHALATE	5600	GCTL	5600	11000	2 U	2.1 U	2 U	1.9 U

Table A-1
Summary of Phase I Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 5 of 7

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA TAP RSL	JAX45-B200- MW01D	JAX45-B200- MW01S	JAX45-B200- MW02D	JAX45-B200- MW02S
					JAX-45-B200- MW01D- 20110504	JAX-45-B200- MW01S- 20110504	JAX-45-B200- MW02D- 20110504	JAX-45-B200- MW02S- 20110504
					20110504	20110504	20110504	20110504
SEMIVOLATILES (µg/L)								
DIMETHYL PHTHALATE	70000	GCTL	70000	NC	2 U	2.1 U	2 U	1.9 U
DI-N-BUTYL PHTHALATE	670	RSL	700	670	2.5 U	4.1 J	2.5 U	2.4 U
DI-N-OCTYL PHTHALATE	140	GCTL	140	NC	1.8 U	1.8 U	1.8 U	1.7 U
HEXACHLOROBENZENE	0.042	RSL	1	0.042	2.1 U	2.2 U	2.1 U	2 U
HEXACHLOROBUTADIENE	0.26	RSL	0.4	0.26	1.8 U	1.8 U	1.8 U	1.7 U
HEXACHLOROCYCLOPENTADIENE	22	RSL	50	22	1.2 U	1.2 U	1.2 U	1.2 U
HEXACHLOROETHANE	0.79	RSL	2.5	0.79	2.3 U	2.4 U	2.3 U	2.2 U
ISOPHORONE	37	RSL	37	67	1.7 U	1.8 U	1.7 U	1.6 U
NITROBENZENE	0.12	RSL	3.5	0.12	3.1 U	3.2 U	3.1 U	3 U
N-NITROSO-DI-N-PROPYLAMINE	0.005	GCTL	0.005	0.0093	2 U	2.1 U	2 U	1.9 U
N-NITROSODIPHENYLAMINE	7.1	GCTL	7.1	10	3.7 U	3.8 U	3.7 U	3.6 U
PENTACHLOROPHENOL	0.17	RSL	1	0.17	2.3 U	2.4 U	2.3 U	2.2 U
PHENOL	10	GCTL	10	4500	1.8 U	1.8 U	1.8 U	1.7 U
VOLATILES (µg/L)								
1,1,1-TRICHLOROETHANE	200	GCTL	200	7500	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-TETRACHLOROETHANE	0.066	RSL	0.2	0.066	0.38 U	0.38 U	0.38 U	0.38 U
1,1,2-TRICHLOROETHANE	0.24	RSL	5	0.24	0.33 U	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	RSL	210000	53000	0.31 U	0.31 U	0.31 U	0.31 U
1,1-DICHLOROETHANE	2.4	RSL	70	2.4	0.21 U	0.21 U	0.21 U	56
1,1-DICHLOROETHENE	7	GCTL	7	260	0.35 U	0.35 U	0.38 J	750
1,2,4-TRICHLOROBENZENE	0.99	RSL	70	0.99	0.37 U	0.37 U	0.37 U	0.37 U
1,2-DIBROMO-3-CHLOROPROPANE	0.00032	RSL	0.2	0.00032	0.5 U	0.5 U	0.5 U	0.5 U

Table A-1
Summary of Phase I Groundwater Analytical Results

Remedial Investigation Report, PSC 45
 Naval Air Station Jacksonville
 Jacksonville, Florida
 Page 6 of 7

LOCATION	PAL	PAL Source	Florida GCTL	USEPA TAP RSL	JAX45-B200- MW01D	JAX45-B200- MW01S	JAX45-B200- MW02D	JAX45-B200- MW02S				
					JAX-45-B200- MW01D- 20110504	JAX-45-B200- MW01S- 20110504	JAX-45-B200- MW02D- 20110504	JAX-45-B200- MW02S- 20110504				
					20110504	20110504	20110504	20110504				
SAMPLE IDENTIFICATION												
SAMPLE DATE												
VOLATILES (µg/L)												
1,2-DIBROMOETHANE	0.0065	RSL	0.02	0.0065	0.22 U	0.22 U	0.22 U	0.22 U				
1,2-DICHLOROBENZENE	280	RSL	600	280	0.15 U	8.6	0.15 U	0.15 U				
1,2-DICHLOROETHANE	0.15	RSL	3	0.15	0.2 U	0.2 U	0.2 U	20				
1,2-DICHLOROPROPANE	0.38	RSL	5	0.38	0.25 U	0.25 U	0.25 U	0.25 U				
1,3-DICHLOROBENZENE	210	GCTL	210	NC	0.26 U	0.26 U	0.26 U	0.26 U				
1,4-DICHLOROBENZENE	0.42	RSL	75	0.42	0.24 U	1.7	0.24 U	0.24 U				
2-BUTANONE	4200	GCTL	4200	4900	1.3 U	1.3 U	1.3 U	1.3 U				
2-HEXANONE	34	RSL	280	34	1.7 U	1.7 U	1.7 U	1.7 U				
4-METHYL-2-PENTANONE	560	GCTL	560	1000	1.3 U	1.3 U	1.3 U	1.3 U				
ACETONE	6300	GCTL	6300	12000	2.2 U	2.2 U	2.2 U	2.2 U				
BENZENE	0.39	RSL	1	0.39	0.26 U	0.34 J	0.26 U	1.1				
BROMODICHLOROMETHANE	0.12	RSL	0.6	0.12	0.33 U	0.33 U	0.33 U	0.33 U				
BROMOFORM	4.4	GCTL	4.4	7.9	0.23 U	0.23 U	0.23 U	0.23 U				
BROMOMETHANE	7	RSL	9.8	7	0.49 U	0.49 U	0.49 U	0.49 U				
CARBON DISULFIDE	700	GCTL	700	720	0.25 U	0.25 U	0.25 U	0.25 U				
CARBON TETRACHLORIDE	0.39	RSL	3	0.39	0.22 U	0.22 U	0.22 U	0.22 U				
CHLOROBENZENE	72	RSL	100	72	0.22 U	0.22 U	0.22 U	0.22 U				
CHLORODIBROMOMETHANE	0.15	RSL	0.4	0.15	0.3 U	0.3 U	0.3 U	0.3 U				
CHLOROETHANE	12	GCTL	12	21000	0.55 UJ	0.55 UJ	0.55 UJ	0.55 UJ				
CHLOROFORM	0.19	RSL	70	0.19	0.32 U	0.32 U	0.32 U	0.32 U				
CHLOROMETHANE	2.7	GCTL	2.7	190	0.36 U	0.36 U	0.36 U	0.36 U				
CIS-1,2-DICHLOROETHENE	28	RSL	70	28	0.21 U	13	0.21 U	2.2				

Table A-1
Summary of Phase I Groundwater Analytical Results

Remedial Investigation Report, PSC 45
 Naval Air Station Jacksonville
 Jacksonville, Florida
 Page 7 of 7

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA TAP RSL	JAX45-B200- MW01D	JAX45-B200- MW01S	JAX45-B200- MW02D	JAX45-B200- MW02S
					JAX-45-B200- MW01D- 20110504	JAX-45-B200- MW01S- 20110504	JAX-45-B200- MW02D- 20110504	JAX-45-B200- MW02S- 20110504
					20110504	20110504	20110504	20110504
VOLATILES (µg/L)								
CIS-1,3-DICHLOROPROPENE	0.41	RSL	NC	0.41	0.19 U	0.19 U	0.19 U	0.19 U
CYCLOHEXANE	13000	RSL	NC	13000	0.31 U	1.6	0.31 U	0.31 U
DICHLORODIFLUOROMETHANE	190	RSL	1400	190	0.24 U	0.24 U	0.24 U	0.24 U
ETHYLBENZENE	1.3	RSL	30	1.3	0.21 U	10	0.21 U	0.21 U
ISOPROPYLBENZENE	0.8	GCTL	0.8	390	0.23 U	3.5	0.23 U	0.23 U
METHYL ACETATE	3000	GCTL	3000	16000	0.53 U	0.53 U	0.53 U	0.53 U
METHYL CYCLOHEXANE	NC	GCTL	NC	NC	0.3 U	3.4	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	12	RSL	20	12	0.36 U	0.36 U	0.36 U	0.36 U
METHYLENE CHLORIDE	4.7	RSL	5	4.7	1.1 U	1.1 U	1.1 U	1.1 U
STYRENE	100	GCTL	100	1100	0.23 U	0.23 U	0.23 U	0.23 U
TETRACHLOROETHENE	0.072	RSL	3	0.072	0.4 U	16	0.4 U	0.4 U
TOLUENE	40	GCTL	40	860	0.27 U	24	0.27 U	0.36 J
TOTAL XYLENES	20	GCTL	20	190	0.25 U	44	0.25 U	0.25 U
TRANS-1,2-DICHLOROETHENE	86	RSL	100	86	0.25 U	0.25 U	0.25 U	0.25 U
TRANS-1,3-DICHLOROPROPENE	NC	GCTL	NC	NC	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	0.44	RSL	3	0.44	0.28 U	2.3	0.31 J	390
TRICHLOROFLUOROMETHANE	1100	RSL	2100	1100	0.24 U	0.24 U	0.24 U	0.24 U
VINYL CHLORIDE	0.015	RSL	1	0.015	0.25 U	0.25 U	0.25 U	0.7 J

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 1 of 8

LOCATION	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB05	JAX45-SB06	JAX45-SB07	JAX45-SB08	JAX45-SB09	JAX45-SB10
SAMPLE IDENTIFICATION							JAX-45-SB05-SB-06242011	JAX-45-SB06-SB-06242011	JAX-45-SB07-SB-06242011	JAX-45-SB08-SB-06242011	JAX-45-SB09-SB-06242011	JAX-45-SB10-SB-06242011
SAMPLE DATE							20110623	20110624	20110624	20110624	20110624	20110624
TOP DEPTH							0.5	0.5	0.5	0.5	0.5	0.5
BOTTOM DEPTH							2.5	2.5	2.5	2.5	2.5	2.5
METALS (mg/kg)												
ALUMINUM	80000	NC	6823.2	77000	77000	RSL	1980 J	2730 J	2430 J	209 J	3770 J	2060 J
ANTIMONY	27	5.4	NC	31	5.4	FL-LEACH	0.08 U	0.06 U	0.06 U	0.06 U	0.07 U	0.06 U
ARSENIC	2.1	NC	1.48	0.39	0.39	FL-SCTL	0.54 J	0.64 J	0.66 J	0.56 J	0.82	0.74
BARIUM	120	1600	20.8	15000	120	FL-SCTL	7.4 J	6.3 J	8.5 J	4.8 J	7.9 J	4.8 J
BERYLLIUM	120	63	0.49	160	63	FL-LEACH	0.05 J	0.06 J	0.09 J	0.02 U	0.07 J	0.03 J
CADMUM	82	7.5	NC	70	7.5	FL-LEACH	0.7 J	0.37 J	0.78 J	0.05 J	0.06 J	0.05 J
CALCIUM	NC	NC	668.3	NC	668.3	BACK	3420	1630	11400	766	16000	5870
CHROMIUM	210	38	14.1	NC	38	FL-LEACH	4.7 J	3.4 J	6.7 J	0.64 U	4.1 J	2.6 J
COBALT	1700	NC	NC	23	23	RSL	0.21 J	0.13 J	0.29 J	0.03 U	0.18 J	0.08 J
COPPER	150	NC	NC	3100	150	FL-SCTL	4.1	3.2	7.2	1.8 J	4.1	1.8 J
IRON	53000	NC	5818.2	55000	53000	FL-SCTL	615 J	1040 J	1470 J	193 J	1010 J	396 J
LEAD	400	NC	6.46	400	400	FL-SCTL	22.5 J	14 J	47.9 J	4.9 J	5.4 J	3.2 J
MAGNESIUM	NC	NC	500.25	NC	500.25	BACK	117 J	136 J	200 J	26 J	274 J	128 J
MANGANESE	3500	NC	6.9	1800	1800	RSL	9.8	14.2	25.6	6.7	10.7	6.8
MERCURY	3	2.1	NC	10	2.1	FL-LEACH	0.02 U					
NICKEL	340	130	NC	1500	130	FL-LEACH	1.3 J	1.1 J	1.5 J	0.12 U	1 J	0.74 J
POTASSIUM	NC	NC	450.67	NC	450.67	BACK	56.6 U	74 U	100 U	19.3 U	124 U	58.8 U
SELENIUM	440	5.2	NC	390	5.2	FL-LEACH	0.2 U	0.15 U	0.15 U	0.16 U	0.17 U	0.15 U
SILVER	410	17	NC	390	17	FL-LEACH	0.03 U	0.02 U	0.03 J	0.02 U	0.03 U	0.02 U
SODIUM	NC	NC	343.1	NC	343.1	BACK	30.9 U	37.1 U	36.1 U	19.5 U	32.4 U	25.9 U
THALLIUM	6.1	2.8	NC	0.78	0.78	RSL	0.1 U	0.08 U	0.07 U	0.08 U	0.08 U	0.07 U
VANADIUM	67	980	NC	390	67	FL-SCTL	2.1 J	3	4	0.81 J	4.4	2.1 J
ZINC	26000	NC	14.49	23000	23000	RSL	24.8 J	24.7 J	31.4 J	1.7 J	14.9 J	6.6 J
MISCELLANEOUS PARAMETERS (%)												
TOTAL SOLIDS	NC	NC	NC	NC	NC	NC	72	86	82	95	86	82
PCBS (µg/kg)												
AROCLOL-1016	NC	NC	NC	3900	3900	RSL	8 UJ	6.7 UJ	7.2 UJ	6.2 U	6.8 U	6.6 U
AROCLOL-1221	NC	NC	NC	140	140	RSL	10 U	8.8 U	9.5 U	8.2 U	9 U	8.6 U
AROCLOL-1232	NC	NC	NC	140	140	RSL	12 U	10 U	11 U	9.7 U	10 U	10 U
AROCLOL-1242	NC	NC	NC	220	220	RSL	7.7 U	6.5 U	7 U	6 U	6.6 U	6.4 U
AROCLOL-1248	NC	NC	NC	220	220	RSL	8.1 U	6.8 U	7.3 U	6.4 U	6.9 U	6.7 U
AROCLOL-1254	NC	NC	NC	220	220	RSL	6.2 U	5.2 U	5.6 U	4.9 U	5.4 U	5.1 U
AROCLOL-1260	NC	NC	NC	220	220	RSL	8 UJ	6.7 UJ	7.2 UJ	6.2 U	6.8 U	6.6 U
TOTAL AROCLOR	500	17000	NC	220	220	RSL	0 U	0 U	0 U	0 U	0 U	0 U
PETROLEUM HYDROCARBONS (mg/kg)												
TPH (C08-C40)	460	340	NC	NC	340	FL-LEACH	250	210	140	100	28	29

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 8

LOCATION SAMPLE IDENTIFICATION SAMPLE DATE TOP DEPTH BOTTOM DEPTH	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB05	JAX45-SB06	JAX45-SB07	JAX45-SB08	JAX45-SB09	JAX45-SB10
							JAX-45-SB05-SB-06242011	JAX-45-SB06-SB-06242011	JAX-45-SB07-SB-06242011	JAX-45-SB08-SB-06242011	JAX-45-SB09-SB-06242011	JAX-45-SB10-SB-06242011
							20110623	20110624	20110624	20110624	20110624	20110624
							0.5	0.5	0.5	0.5	0.5	0.5
							2.5	2.5	2.5	2.5	2.5	2.5
POLYCYCLIC AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	200000	3100	NC	22000	3100	FL-LEACH	6.7 J	8.9 J	10 J	1.8 U	1.9 U	1.9 U
2-METHYLNAPHTHALENE	210000	8500	NC	310000	8500	FL-LEACH	7.8 J	5.4 J	13 J	2.3 U	2.5 U	2.5 U
ACENAPHTHENE	2400000	2100	NC	3400000	2100	FL-LEACH	17 J	68	25	4 J	1.7 U	1.7 U
ACENAPHTHYLENE	1800000	27000	NC	3400000	27000	FL-LEACH	2.9 J	1.4 U	6.3 J	11 J	1.4 U	1.3 U
ANTHRACENE	21000000	2500000	NC	17000000	2500000	FL-LEACH	12 J	57	12 J	6.6 J	2.8 J	1.3 U
BAP EQUIVALENT-HALFND	100	NC	NC	15	15	RSL	134.47	446.02	257.03	234.88	53.712	17.1561
BENZO(A)ANTHRACENE	NC	800	NC	150	150	RSL	68	280 J	130	110 J	32	4 J
BENZO(A)PYRENE	100	8000	NC	15	15	RSL	87	300	170	150	35	11 J
BENZO(B)FLUORANTHENE	NC	2400	NC	150	150	RSL	150	430	280	240	52	15 J
BENZO(G,H,I)PERYLENE	2500000	32000000	NC	1700000	1700000	RSL	69	130	100	99	18 J	9.4 J
BENZO(K)FLUORANTHENE	NC	24000	NC	1500	1500	RSL	57	170	86	76	18 J	5 J
CHRYSENE	NC	77000	NC	15000	15000	RSL	100	320	170	120	32	6.1 J
DIBENZO(A,H)ANTHRACENE	NC	700	NC	15	15	RSL	15 J	49	30	34	6.9 J	2.8 J
FLUORANTHENE	3200000	1200000	NC	2300000	1200000	FL-LEACH	200	640	340	150	58	7.7 J
FLUORENE	2600000	160000	NC	2300000	160000	FL-LEACH	10 J	46	16 J	3.3 U	3.6 U	3.6 U
INDENO(1,2,3-CD)PYRENE	NC	6600	NC	150	150	RSL	100 J	240	150 J	150 J	32 J	14 J
NAPHTHALENE	55000	1200	NC	3600	1200	FL-LEACH	15 J	6.3 J	33	2.7 U	2.9 U	2.9 U
PHENANTHRENE	2200000	250000	NC	1700000	250000	FL-LEACH	150	360 J	200	40 J	9.9 J	2.2 J
PYRENE	2400000	880000	NC	1700000	880000	FL-LEACH	140	390 J	220	110 J	34	6 J
SEMICVOLATILES (µg/kg)												
1,1-BIPHENYL	3000000	200	NC	51000	200	FL-LEACH	99 U	84 U	88 U	76 U	83 U	82 U
2,2'-OXYBIS(1-CHLOROPROPANE)	6000	9	NC	4600	9	FL-LEACH	120 UJ	100 UJ	110 UJ	93 UJ	100 UJ	100 UJ
2,4,5-TRICHLOROPHENOL	7700000	70	NC	6100000	70	FL-LEACH	210 U	180 U	190 U	160 U	180 U	170 U
2,4,6-TRICHLOROPHENOL	70000	60	NC	44000	60	FL-LEACH	210 U	180 U	190 U	160 U	180 U	170 U
2,4-DICHLOROPHENOL	190000	3	NC	180000	3	FL-LEACH	200 U	170 U	180 U	160 U	170 U	170 U
2,4-DIMETHYLPHENOL	1300000	1700	NC	1200000	1700	FL-LEACH	220 U	190 U	200 U	170 U	190 U	180 U
2,4-DINITROPHENOL	110000	60	NC	120000	60	FL-LEACH	510 U	440 U	450 U	390 U	430 U	420 U
2,4-DINITROTOLUENE	1200	0.4	NC	1600	0.4	FL-LEACH	120 U	98 U	100 U	89 U	96 U	95 U
2,6-DINITROTOLUENE	1200	0.4	NC	61000	0.4	FL-LEACH	110 U	92 U	95 U	82 U	89 U	88 U
2-CHLORONAPHTHALENE	5000000	260000	NC	6300000	260000	FL-LEACH	120 U	100 U	100 U	91 U	98 U	97 U
2-CHLOROPHENOL	130000	700	NC	390000	700	FL-LEACH	220 U	190 U	200 U	170 U	180 U	180 U
2-METHYLPHENOL	2900000	300	NC	3100000	300	FL-LEACH	270 U	230 U	240 U	210 U	230 U	220 U
2-NITROANILINE	24000	100	NC	610000	100	FL-LEACH	100 U	87 U	90 U	78 U	85 U	84 U
2-NITROPHENOL	NC	NC	NC	NC	NC	NC	230 U	190 U	200 U	170 U	190 U	190 U
3&4-METHYLPHENOL	NC	NC	NC	NC	NC	NC	250 U	220 U	220 U	200 U	210 U	210 U
3,3'-DICHLOROBENZIDINE	2100	3	NC	1100	3	FL-LEACH	150 U	130 U	140 U	120 U	130 U	130 U
3-NITROANILINE	21000	10	NC	NC	10	FL-LEACH	130 U	110 U	110 U	98 U	110 U	100 U
4,6-DINITRO-2-METHYLPHENOL	8400	400	NC	4900	400	FL-LEACH	460 U	390 U	410 U	350 U	380 U	380 U
4-BROMOPHENYL PHENYL ETHER	NC	NC	NC	NC	NC	NC	120 U	98 U	100 U	89 U	96 U	95 U

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 3 of 8

LOCATION SAMPLE IDENTIFICATION SAMPLE DATE TOP DEPTH BOTTOM DEPTH	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB05	JAX45-SB06	JAX45-SB07	JAX45-SB08	JAX45-SB09	JAX45-SB10
							JAX-45-SB05-SB-06242011	JAX-45-SB06-SB-06242011	JAX-45-SB07-SB-06242011	JAX-45-SB08-SB-06242011	JAX-45-SB09-SB-06242011	JAX-45-SB10-SB-06242011
							20110623	20110624	20110624	20110624	20110624	20110624
							0.5	0.5	0.5	0.5	0.5	0.5
							2.5	2.5	2.5	2.5	2.5	2.5
SEMIVOLATILES (µg/kg)												
4-CHLORO-3-METHYLPHENOL	600000	400	NC	6100000	400	FL-LEACH	220 U	190 U	200 U	170 U	190 U	180 U
4-CHLOROANILINE	270000	200	NC	2400	200	FL-LEACH	160 U	140 U	140 U	120 U	130 U	130 U
4-CHLOROPHENYL PHENYL ETHER	NC	NC	NC	NC	NC	NC	100 U	90 U	94 U	82 U	88 U	87 U
4-NITROANILINE	17000	8	NC	24000	8	FL-LEACH	180 U	160 U	160 U	140 U	150 U	150 U
4-NITROPHENOL	560000	300	NC	NC	300	FL-LEACH	420 U	360 U	370 U	320 U	350 U	340 U
ACETOPHENONE	3900000	3900	NC	7800000	3900	FL-LEACH	240 U	210 U	210 U	190 U	200 U	200 U
ATRAZINE	4300	60	NC	2100	60	FL-LEACH	120 U	100 U	110 U	95 U	100 U	100 U
BENZALDEHYDE	3300000	4800	NC	7800000	4800	FL-LEACH	160 U	140 U	140 U	120 U	140 U	130 U
BIS(2-CHLOROETHOXY)METHANE	250000	63000	NC	180000	63000	FL-LEACH	130 U	110 U	120 U	100 U	110 U	110 U
BIS(2-CHLOROETHYL)ETHER	300	0.1	NC	210	0.1	FL-LEACH	110 U	94 U	98 U	85 U	92 U	90 U
BIS(2-ETHYLHEXYL)PHTHALATE	72000	3600000	NC	35000	35000	RSL	130 U	110 U	120 U	100 U	110 U	110 U
BUTYL BENZYL PHTHALATE	17000000	310000	NC	260000	260000	RSL	130 U	110 U	110 U	97 U	100 U	100 U
CAPROLACTAM	NC	NC	NC	31000000	31000000	RSL	200 U	170 U	170 U	150 U	160 U	160 U
CARBAZOLE	49000	200	NC	NC	200	FL-LEACH	150 U	130 U	130 U	120 U	120 U	120 U
DIBENZOFURAN	320000	15000	NC	78000	15000	FL-LEACH	110 U	92 U	95 U	82 U	89 U	88 U
DIETHYL PHTHALATE	61000000	86000	NC	49000000	86000	FL-LEACH	110 U	93 U	96 U	84 U	90 U	89 U
DIMETHYL PHTHALATE	690000000	380000	NC	NC	380000	FL-LEACH	100 U	90 U	94 U	82 U	88 U	87 U
DI-N-BUTYL PHTHALATE	8200000	47000	NC	6100000	47000	FL-LEACH	140 U	120 U	120 U	100 U	110 U	110 U
DI-N-OCTYL PHTHALATE	1700000	480000000	NC	NC	1700000	FL-SCTL	290 U	240 U	250 U	220 U	240 U	240 U
HEXACHLOROBENZENE	400	2200	NC	300	300	RSL	110 U	95 U	99 U	86 U	93 U	92 U
HEXACHLOROBUTADIENE	6200	1000	NC	6200	1000	FL-LEACH	110 U	96 U	100 U	87 U	94 U	93 U
HEXACHLOROCYCLOPENTADIENE	9500	400000	NC	370000	9500	FL-SCTL	110 U	95 U	99 U	86 U	93 U	92 U
HEXACHLOROETHANE	38000	200	NC	12000	200	FL-LEACH	130 U	110 U	120 U	100 U	110 U	110 U
ISOPHORONE	540000	200	NC	510000	200	FL-LEACH	100 U	87 U	90 U	78 U	85 U	84 U
NITROBENZENE	18000	20	NC	4800	20	FL-LEACH	120 U	100 U	110 U	95 U	100 U	100 U
N-NITROSO-DI-N-PROPYLAMINE	80	0.05	NC	69	0.05	FL-LEACH	110 U	96 U	100 U	87 U	94 U	93 U
N-NITROSODIPHENYLAMINE	180000	400	NC	99000	400	FL-LEACH	300 U	250 U	260 U	230 U	250 U	240 U
PENTACHLOROPHENOL	7200	30	NC	890	30	FL-LEACH	320 U	270 U	280 U	250 U	270 U	260 U
PHENOL	500000	50	NC	18000000	50	FL-LEACH	210 U	180 U	190 U	160 U	180 U	170 U
VOLATILES (µg/kg)												
1,1,1-TRICHLOROETHANE	730000	1900	NC	8700000	1900	FL-LEACH	0.5 U	0.42 U	0.46 U	0.4 U	0.46 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	700	1	NC	560	1	FL-LEACH	1 U	0.84 U	0.92 U	0.81 U	0.92 U	1 U
1,1,2-TRICHLOROETHANE	1400	30	NC	1100	30	FL-LEACH	1.2 U	0.97 U	1.1 U	0.93 U	1.1 U	1.2 U
1,1,2-TRICHLOROTRIFLUOROETHANE	18000000	11000000	NC	43000000	11000000	FL-LEACH	1.1 U	0.9 U	0.99 U	0.86 U	0.99 U	1.1 U
1,1-DICHLOROETHANE	390000	400	NC	3300	400	FL-LEACH	2 U	1.7 U	1.9 U	1.6 U	1.9 U	2 U
1,1-DICHLOROETHENE	95000	60	NC	240000	60	FL-LEACH	1.1 U	0.93 U	1 U	0.89 U	1 U	1.1 U
1,2,4-TRICHLOROBENZENE	660000	5300	NC	22000	5300	FL-LEACH	0.95 U	0.79 U	0.87 U	0.76 U	0.87 U	0.95 U
1,2-DIBROMO-3-CHLOROPROPANE	700	1	NC	5.4	1	FL-LEACH	1.8 U	1.5 U	1.6 U	1.4 U	1.6 U	1.8 U
1,2-DIBROMOETHANE	100	0.1	NC	34	0.1	FL-LEACH	1.4 U	1.2 U	1.3 U	1.2 U	1.3 U	1.4 U

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 4 of 8

LOCATION SAMPLE IDENTIFICATION SAMPLE DATE TOP DEPTH BOTTOM DEPTH	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB05	JAX45-SB06	JAX45-SB07	JAX45-SB08	JAX45-SB09	JAX45-SB10
							JAX-45-SB05-SB-06242011	JAX-45-SB06-SB-06242011	JAX-45-SB07-SB-06242011	JAX-45-SB08-SB-06242011	JAX-45-SB09-SB-06242011	JAX-45-SB10-SB-06242011
							20110623	20110624	20110624	20110624	20110624	20110624
							0.5	0.5	0.5	0.5	0.5	0.5
							2.5	2.5	2.5	2.5	2.5	2.5
VOLATILES (µg/kg)												
1,2-DICHLOROBENZENE	880000	17000	NC	1900000	17000	FL-LEACH	0.94 U	0.78 U	0.86 U	0.75 U	0.86 U	0.94 U
1,2-DICHLOROETHANE	500	10	NC	430	10	FL-LEACH	1.2 U	1 U	1.1 U	0.96 U	1.1 U	1.2 U
1,2-DICHLOROPROPANE	600	30	NC	940	30	FL-LEACH	1.7 U	1.4 U	1.5 U	1.3 U	1.5 U	1.7 U
1,3-DICHLOROBENZENE	380000	7000	NC	NC	7000	FL-LEACH	0.74 U	0.62 U	0.68 U	0.6 U	0.68 U	0.74 U
1,4-DICHLOROBENZENE	6400	2200	NC	2400	2200	FL-LEACH	0.53 U	0.44 U	0.48 U	0.42 U	0.48 U	0.53 U
2-BUTANONE	16000000	17000	NC	28000000	17000	FL-LEACH	7.1 U	5.9 U	6.5 U	5.7 U	6.5 U	7.1 U
2-HEXANONE	24000	1400	NC	210000	1400	FL-LEACH	5.8 U	4.8 U	5.3 U	4.6 U	5.3 U	5.8 U
4-METHYL-2-PENTANONE	4300000	2600	NC	5300000	2600	FL-LEACH	7.1 U	5.9 U	6.5 U	5.7 U	6.5 U	7.1 U
ACETONE	11000000	25000	NC	61000000	25000	FL-LEACH	33 U	14 U	10 U	9.1 U	9.9 U	12 U
BENZENE	1200	7	NC	1100	7	FL-LEACH	1.1 U	0.92 U	1 U	0.88 U	1 U	1.1 U
BROMODICHLOROMETHANE	1500	4	NC	270	4	FL-LEACH	0.72 U	0.6 U	0.66 U	0.58 U	0.66 U	0.72 U
BROMOFORM	48000	30	NC	62000	30	FL-LEACH	0.84 U	0.7 U	0.77 U	0.67 U	0.77 U	0.84 U
BROMOMETHANE	3100	50	NC	7300	50	FL-LEACH	1.3 U	1.1 U	1.2 U	1 U	1.2 U	1.3 U
CARBON DISULFIDE	270000	5600	NC	820000	5600	FL-LEACH	3 U	2.5 U	2.8 U	2.4 U	2.8 U	3 U
CARBON TETRACHLORIDE	500	40	NC	610	40	FL-LEACH	1.6 U	1.3 U	1.4 U	1.2 U	1.4 U	1.6 U
CHLOROBENZENE	120000	1300	NC	290000	1300	FL-LEACH	0.61 U	0.51 U	0.56 U	0.49 U	0.56 U	0.61 U
CHLORODIBROMOMETHANE	1500	3	NC	680	3	FL-LEACH	1.2 U	1 U	1.1 U	0.96 U	1.1 U	1.2 U
CHLOROETHANE	3900	60	NC	15000000	60	FL-LEACH	1.6 U	1.3 U	1.4 U	1.2 U	1.4 U	1.6 U
CHLOROFORM	400	400	NC	290	290	RSL	0.42 U	0.35 U	0.38 U	0.34 U	0.38 U	0.42 U
CHLOROMETHANE	4000	10	NC	120000	10	FL-LEACH	1.7 U	1.4 U	1.5 U	1.3 U	1.5 U	1.7 U
CIS-1,2-DICHLOROETHENE	33000	400	NC	160000	400	FL-LEACH	1.1 U	0.91 U	1 U	0.87 U	1 U	1.1 U
CIS-1,3-DICHLOROPROPENE	NC	NC	NC	1700	1700	RSL	0.86 U	0.72 U	0.79 U	0.69 U	0.79 U	0.86 U
CYCLOHEXANE	NC	NC	NC	7000000	7000000	RSL	1.7 U	1.4 U	1.5 U	1.3 U	1.5 U	1.7 U
DICHLORODIFLUOROMETHANE	77000	44000	NC	94000	44000	FL-LEACH	1.1 U	0.92 U	1 U	0.88 U	1 U	1.1 U
ETHYLBENZENE	1500000	600	NC	5400	600	FL-LEACH	0.78 U	0.65 U	0.72 U	0.62 U	0.72 U	0.78 U
ISOPROPYLBENZENE	220000	200	NC	2100000	200	FL-LEACH	1.1 U	0.92 U	1 U	0.88 U	1 U	1.1 U
METHYL ACETATE	6800000	16000	NC	78000000	16000	FL-LEACH	3.2 U	2.7 U	3 U	2.6 U	3 U	3.2 U
METHYL CYCLOHEXANE	NC	NC	NC	NC	NC	NC	1.2 U	0.96 U	1 U	0.92 U	1 U	1.2 U
METHYL TERT-BUTYL ETHER	4400000	90	NC	43000	90	FL-LEACH	1.3 U	1.1 U	1.2 U	1 U	1.2 U	1.3 U
METHYLENE CHLORIDE	17000	20	NC	11000	20	FL-LEACH	9.5 U	7.9 U	8.7 U	7.6 U	8.7 U	9.5 U
STYRENE	3600000	3600	NC	6300000	3600	FL-LEACH	0.61 U	0.51 U	0.56 U	0.49 U	0.56 U	0.61 U
TETRACHLOROETHENE	8800	30	NC	550	30	FL-LEACH	1.4 U	1.2 U	1.3 U	1.2 U	1.3 U	1.4 U
TOLUENE	7500000	500	NC	5000000	500	FL-LEACH	1.7 U	1.4 U	1.5 U	1.3 U	1.5 U	1.7 U
TOTAL XYLENES	130000	200	NC	630000	200	FL-LEACH	1.6 U	1.3 U	1.4 U	1.2 U	1.4 U	1.6 U
TRANS-1,2-DICHLOROETHENE	53000	700	NC	150000	700	FL-LEACH	0.85 U	0.71 U	0.78 U	0.68 U	0.78 U	0.85 U
TRANS-1,3-DICHLOROPROPENE	NC	NC	NC	1700	1700	RSL	1 U	0.86 U	0.95 U	0.82 U	0.95 U	1 U
TRICHLOROETHENE	6400	30	NC	910	30	FL-LEACH	0.71 U	0.59 U	0.65 U	0.57 U	0.65 U	0.71 U
TRICHLOROFLUOROMETHANE	270000	33000	NC	790000	33000	FL-LEACH	1.1 U	0.91 U	1 U	0.87 U	1 U	1.1 U
VINYL CHLORIDE	200	7	NC	60	7	FL-LEACH	1 U	0.87 U	0.96 U	0.84 U	0.96 U	1 U

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 5 of 8

LOCATION SAMPLE IDENTIFICATION SAMPLE DATE TOP DEPTH BOTTOM DEPTH	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB11	JAX45-SB12			JAX45-SB13	JAX45-SB14
							JAX-45-SB11-SB-06242011	JAX-45-SB12-SB-06242011	JAX-45-SB12-SB-06242011-AVG	JAX-45-SB12-SB-06242011-D	JAX-45-SB13-SB-06242011	JAX-45-SB14-SB-06242011
							20110624	20110624	20110624	20110624	20110624	20110624
							0.5	0.5	0.5	0.5	0.5	0.5
							2.5	2.5	2.5	2.5	2.5	2.5
METALS (mg/kg)												
ALUMINUM	80000	NC	6823.2	77000	77000	RSL	2690 J	1730 J	1209.5	689 J	4000 J	4070 J
ANTIMONY	27	5.4	NC	31	5.4	FL-LEACH	0.15 J	0.08 J	0.055	0.06 U	0.08 J	0.07 U
ARSENIC	2.1	NC	1.48	0.39	0.39	FL-SCTL	0.59 J	0.81 J	0.745	0.68	0.58 J	0.8 J
BARIUM	120	1600	20.8	15000	120	FL-SCTL	10.4 J	19.2 J	13.25	7.3 J	11 J	7.2 J
BERYLLIUM	120	63	0.49	160	63	FL-LEACH	0.12 J	0.15 J	0.08	0.02 U	0.09 J	0.06 J
CADMIUM	82	7.5	NC	70	7.5	FL-LEACH	0.26 J	15.8 J	9.7	3.6 J	1.2 J	0.14 J
CALCIUM	NC	NC	668.3	NC	668.3	BACK	61000	8340	6680	5020	6550	987
CHROMIUM	210	38	14.1	NC	38	FL-LEACH	5.5 J	28.9 J	15.75	2.6 J	6.7 J	4.5 J
COBALT	1700	NC	NC	23	23	RSL	0.35 J	1.3 J	0.7	0.1 J	0.39 J	0.17 J
COPPER	150	NC	NC	3100	150	FL-SCTL	3.9	24.4	25.1	25.8	5.2	4.2
IRON	53000	NC	5818.2	55000	53000	FL-SCTL	710 J	2320 J	1580	840 J	1010 J	1860 J
LEAD	400	NC	6.46	400	400	FL-SCTL	9.3 J	136 J	76.95	17.9 J	30.4 J	9.6 J
MAGNESIUM	NC	NC	500.25	NC	500.25	BACK	743 J	451 J	261.55	72.1 J	232 J	160 J
MANGANESE	3500	NC	6.9	1800	1800	RSL	23	70.7	62.15	53.6	17.9	13.8
MERCURY	3	2.1	NC	10	2.1	FL-LEACH	0.02 U	0.07	0.055	0.04	0.03 U	0.04 U
NICKEL	340	130	NC	1500	130	FL-LEACH	1.7 J	3.9 J	2.36	0.82 J	1.9 J	1.2 J
POTASSIUM	NC	NC	450.67	NC	450.67	BACK	137 U	100 U	62.9 U	25.8 U	101 U	90.1 U
SELENIUM	440	5.2	NC	390	5.2	FL-LEACH	0.17 U	0.18 U	0.16 U	0.14 U	0.13 U	0.18 U
SILVER	410	17	NC	390	17	FL-LEACH	0.03 U	0.08 J	0.045	0.02 U	0.03 J	0.07 J
SODIUM	NC	NC	343.1	NC	343.1	BACK	55.5 U	27.2 U	29.9 U	32.6 U	30.5 U	30.2 U
THALLIUM	6.1	2.8	NC	0.78	0.78	RSL	0.08 U	0.09 U	0.08 U	0.07 U	0.07 U	0.09 U
VANADIUM	67	980	NC	390	67	FL-SCTL	7	10	7	4	3.9	5.3
ZINC	26000	NC	14.49	23000	23000	RSL	21.2 J	623 J	368.5	114 J	42.3 J	12.9 J
MISCELLANEOUS PARAMETERS (%)												
TOTAL SOLIDS	NC	NC	NC	NC	NC	NC	83	93	93	93	80	86
PCBS (µg/kg)												
AROCOLOR-1016	NC	NC	NC	3900	3900	RSL	7 U	5.9 U	6.15 U	6.4 U	7.2 U	6.4 U
AROCOLOR-1221	NC	NC	NC	140	140	RSL	9.2 U	7.8 U	8.1 U	8.4 U	9.5 U	8.4 U
AROCOLOR-1232	NC	NC	NC	140	140	RSL	11 U	9.2 U	9.55 U	9.9 U	11 U	10 U
AROCOLOR-1242	NC	NC	NC	220	220	RSL	6.8 U	5.7 U	5.95 U	6.2 U	7 U	6.2 U
AROCOLOR-1248	NC	NC	NC	220	220	RSL	7.1 U	6 U	6.25 U	6.5 U	7.3 U	6.5 U
AROCOLOR-1254	NC	NC	NC	220	220	RSL	5.5 U	4.6 U	4.8 U	5 U	5.6 U	5 U
AROCOLOR-1260	NC	NC	NC	220	220	RSL	7 U	5.9 U	6.15 U	6.4 U	7.2 U	6.4 U
TOTAL AROCLOR	500	17000	NC	220	220	RSL	0 U	0 U	0 U	0 U	0 U	0 U
PETROLEUM HYDROCARBONS (mg/kg)												
TPH (C08-C40)	460	340	NC	NC	340	FL-LEACH	72	230	210	190	200	30

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 6 of 8

LOCATION SAMPLE IDENTIFICATION SAMPLE DATE TOP DEPTH BOTTOM DEPTH	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB11	JAX45-SB12				JAX45-SB13	JAX45-SB14
							JAX45-SB11-SB-06242011	JAX45-SB12-SB-06242011	JAX45-SB12-SB-06242011-AVG	JAX45-SB12-SB-06242011-D	JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011	
							20110624	20110624	20110624	20110624	20110624	20110624	
							0.5	0.5	0.5	0.5	0.5	0.5	
							2.5	2.5	2.5	2.5	2.5	2.5	
POLYCYCLIC AROMATIC HYDROCARBONS (µg/kg)													
1-METHYLNAPHTHALENE	200000	3100	NC	22000	3100	FL-LEACH	7.2 J	5.9 J	4.75	3.6 J	3.2 J	2 U	
2-METHYLNAPHTHALENE	210000	8500	NC	310000	8500	FL-LEACH	3.5 J	5.7 J	4.15	2.6 J	3 J	2.5 U	
ACENAPHTHENE	2400000	2100	NC	3400000	2100	FL-LEACH	37	18 J	15.5	13 J	8.7 J	1.7 U	
ACENAPHTHYLENE	1800000	27000	NC	3400000	27000	FL-LEACH	1.4 U	2.3 J	2.55	2.8 J	3.8 J	1.4 U	
ANTHRACENE	21000000	2500000	NC	17000000	2500000	FL-LEACH	74	13 J	15.5	18 J	7.9 J	1.4 U	
BAP EQUIVALENT-HALFND	100	NC	NC	15	15	RSL	248.08	165.82	173.315	180.81	145.379	7.6714	
BENZO(A)ANTHRACENE	NC	800	NC	150	150	RSL	230	82	96	110	72 J	2.5 J	
BENZO(A)PYRENE	100	8000	NC	15	15	RSL	160	110	115	120	93 J	5 J	
BENZO(B)FLUORANTHENE	NC	2400	NC	150	150	RSL	260	190	190	190	160 J	6.9 J	
BENZO(G,H,I)PERYLENE	2500000	32000000	NC	1700000	1700000	RSL	67	67	68.5	70	78 J	5.4 J	
BENZO(K)FLUORANTHENE	NC	24000	NC	1500	1500	RSL	88	60	64.5	69	49	3.6 U	
CHRYSENE	NC	77000	NC	15000	15000	RSL	200	120	120	120	89 J	3.4 J	
DIBENZO(A,H)ANTHRACENE	NC	700	NC	15	15	RSL	26	18 J	19	20 J	19 J	2.1 U	
FLUORANTHENE	3200000	1200000	NC	2300000	1200000	FL-LEACH	660	250	275	300	150 J	5.5 J	
FLUORENE	2600000	160000	NC	2300000	160000	FL-LEACH	27	14 J	11.35	8.7 J	6 J	3.7 U	
INDENO(1,2,3-CD)PYRENE	NC	6600	NC	150	150	RSL	120 J	99 J	99.5	100 J	96 J	6.6 J	
NAPHTHALENE	55000	1200	NC	3600	1200	FL-LEACH	3 U	13 J	8	3 J	4 J	3 U	
PHENANTHRENE	2200000	250000	NC	1700000	250000	FL-LEACH	360 J	160	145	130	76 J	2.2 J	
PYRENE	2400000	880000	NC	1700000	880000	FL-LEACH	350 J	160	180	200	120 J	3.9 J	
SEMOVOLATILES (µg/kg)													
1,1-BIPHENYL	3000000	200	NC	51000	200	FL-LEACH	85 U	78 U	76 U	74 U	86 U	85 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	6000	9	NC	4600	9	FL-LEACH	100 UJ	95 UJ	92.5 U	90 UJ	100 UJ	100 UJ	
2,4,5-TRICHLOROPHENOL	7700000	70	NC	6100000	70	FL-LEACH	180 U	170 U	165 U	160 U	180 U	180 U	
2,4,6-TRICHLOROPHENOL	70000	60	NC	44000	60	FL-LEACH	180 U	170 U	165 U	160 U	180 U	180 U	
2,4-DICHLOROPHENOL	190000	3	NC	180000	3	FL-LEACH	180 U	160 U	155 U	150 U	180 U	170 U	
2,4-DIMETHYLPHENOL	1300000	1700	NC	1200000	1700	FL-LEACH	190 U	180 U	175 U	170 U	200 U	190 U	
2,4-DINITROPHENOL	110000	60	NC	120000	60	FL-LEACH	440 U	400 U	390 U	380 U	450 U	440 U	
2,4-DINITROTOLUENE	1200	0.4	NC	1600	0.4	FL-LEACH	99 U	91 U	88.5 U	86 U	100 U	98 U	
2,6-DINITROTOLUENE	1200	0.4	NC	61000	0.4	FL-LEACH	92 U	85 U	82.5 U	80 U	94 U	92 U	
2-CHLORONAPHTHALENE	5000000	260000	NC	6300000	260000	FL-LEACH	100 U	93 U	90.5 U	88 U	100 U	100 U	
2-CHLOROPHENOL	130000	700	NC	390000	700	FL-LEACH	190 U	180 U	170 U	160 U	190 U	190 U	
2-METHYLPHENOL	2900000	300	NC	3100000	300	FL-LEACH	230 U	210 U	205 U	200 U	240 U	230 U	
2-NITROANILINE	24000	100	NC	610000	100	FL-LEACH	88 U	80 U	78 U	76 U	89 U	87 U	
2-NITROPHENOL	NC	NC	NC	NC	NC	NC	190 U	180 U	175 U	170 U	200 U	190 U	
3&4-METHYLPHENOL	NC	NC	NC	NC	NC	NC	220 U	200 U	195 U	190 U	220 U	220 U	
3,3'-DICHLOROBENZIDINE	2100	3	NC	1100	3	FL-LEACH	130 U	120 U	115 U	110 U	140 U	130 U	
3-NITROANILINE	21000	10	NC	NC	10	FL-LEACH	110 U	100 U	97.5 U	95 U	110 U	110 U	
4,6-DINITRO-2-METHYLPHENOL	8400	400	NC	4900	400	FL-LEACH	390 U	360 U	350 U	340 U	400 U	390 U	
4-BROMOPHENYL PHENYL ETHER	NC	NC	NC	NC	NC	NC	99 U	91 U	88.5 U	86 U	100 U	98 U	

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 7 of 8

LOCATION SAMPLE IDENTIFICATION	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB11	JAX45-SB12			JAX45-SB13	JAX45-SB14
							JAX45-SB11-SB-06242011	JAX45-SB12-SB-06242011	JAX45-SB12-SB-06242011-AVG	JAX45-SB12-SB-06242011-D	JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011
							20110624	20110624	20110624	20110624	20110624	20110624
							0.5	0.5	0.5	0.5	0.5	0.5
							2.5	2.5	2.5	2.5	2.5	2.5
SEMIVOLATILES (µg/kg)												
4-CHLORO-3-METHYLPHENOL	600000	400	NC	6100000	400	FL-LEACH	190 U	180 U	175 U	170 U	200 U	190 U
4-CHLOROANILINE	270000	200	NC	2400	200	FL-LEACH	140 U	130 U	125 U	120 U	140 U	140 U
4-CHLOROPHENYL PHENYL ETHER	NC	NC	NC	NC	NC	NC	91 U	84 U	81 U	78 U	92 U	90 U
4-NITROANILINE	17000	8	NC	24000	8	FL-LEACH	160 U	140 U	135 U	130 U	160 U	160 U
4-NITROPHENOL	560000	300	NC	NC	300	FL-LEACH	360 U	330 U	320 U	310 U	370 U	360 U
ACETOPHENONE	3900000	3900	NC	7800000	3900	FL-LEACH	210 U	190 U	185 U	180 U	210 U	210 U
ATRAZINE	4300	60	NC	2100	60	FL-LEACH	110 U	98 U	95 U	92 U	110 U	100 U
BENZALDEHYDE	3300000	4800	NC	7800000	4800	FL-LEACH	140 U	130 UJ	125 U	120 UJ	140 U	140 U
BIS(2-CHLOROETHOXY)METHANE	250000	63000	NC	180000	63000	FL-LEACH	110 U	100 U	98.5 U	97 U	110 U	110 U
BIS(2-CHLOROETHYL)ETHER	300	0.1	NC	210	0.1	FL-LEACH	94 U	87 U	84.5 U	82 U	96 U	94 U
BIS(2-ETHYLHEXYL)PHTHALATE	72000	3600000	NC	35000	35000	RSL	220 J	100 U	140	230 J	120 U	110 U
BUTYL BENZYL PHTHALATE	17000000	310000	NC	260000	260000	RSL	110 U	100 U	97 U	94 U	110 U	110 U
CAPROLACTAM	NC	NC	NC	31000000	31000000	RSL	170 U	150 U	145 U	140 U	170 U	170 U
CARBAZOLE	49000	200	NC	NC	200	FL-LEACH	130 U	120 U	115 U	110 U	130 U	130 U
DIBENZOFURAN	320000	15000	NC	78000	15000	FL-LEACH	92 U	85 U	82.5 U	80 U	94 U	92 U
DIETHYL PHTHALATE	61000000	86000	NC	49000000	86000	FL-LEACH	93 U	86 U	83 U	80 U	95 U	93 U
DIMETHYL PHTHALATE	690000000	380000	NC	NC	380000	FL-LEACH	91 U	84 U	81 U	78 U	92 U	90 U
DI-N-BUTYL PHTHALATE	8200000	47000	NC	6100000	47000	FL-LEACH	120 U	110 U	105 U	100 U	120 U	120 U
DI-N-OCTYL PHTHALATE	1700000	480000000	NC	NC	1700000	FL-SCTL	250 U	230 U	220 U	210 U	250 U	240 U
HEXACHLOROBENZENE	400	2200	NC	300	300	RSL	96 U	88 U	85 U	82 U	97 U	95 U
HEXACHLOROBUTADIENE	6200	1000	NC	6200	1000	FL-LEACH	97 U	89 U	86.5 U	84 U	98 U	96 U
HEXACHLOROCYCLOPENTADIENE	9500	400000	NC	370000	9500	FL-SCTL	96 U	88 U	85 U	82 U	97 U	95 U
HEXACHLOROETHANE	38000	200	NC	12000	200	FL-LEACH	110 U	100 U	98.5 U	97 U	110 U	110 U
ISOPHORONE	540000	200	NC	510000	200	FL-LEACH	88 U	80 U	78 U	76 U	89 U	87 U
NITROBENZENE	18000	20	NC	4800	20	FL-LEACH	110 U	98 U	95 U	92 U	110 U	100 U
N-NITROSO-DI-N-PROPYLAMINE	80	0.05	NC	69	0.05	FL-LEACH	97 U	89 UJ	86.5 U	84 UJ	98 UJ	96 U
N-NITROSODIPHENYLAMINE	180000	400	NC	99000	400	FL-LEACH	260 U	230 U	225 U	220 U	260 U	250 U
PENTACHLOROPHENOL	7200	30	NC	890	30	FL-LEACH	280 U	250 U	245 U	240 U	280 U	270 U
PHENOL	500000	50	NC	18000000	50	FL-LEACH	180 U	170 U	165 U	160 U	180 U	180 U
VOLATILES (µg/kg)												
1,1,1-TRICHLOROETHANE	730000	1900	NC	8700000	1900	FL-LEACH	0.5 U	0.42 U	0.44 U	0.46 U	0.5 U	0.42 U
1,1,2,2-TETRACHLOROETHANE	700	1	NC	560	1	FL-LEACH	1 U	0.83 U	0.875 U	0.92 U	1 U	0.84 U
1,1,2-TRICHLOROETHANE	1400	30	NC	1100	30	FL-LEACH	1.2 U	0.96 U	1.03 U	1.1 U	1.2 U	0.97 U
1,1,2-TRICHLOROTRIFLUOROETHANE	18000000	11000000	NC	43000000	11000000	FL-LEACH	1.1 U	0.89 U	0.94 U	0.99 U	1.1 U	0.9 U
1,1-DICHLOROETHANE	390000	400	NC	3300	400	FL-LEACH	2 U	1.7 U	1.8 U	1.9 U	2 U	1.7 U
1,1-DICHLOROETHENE	95000	60	NC	240000	60	FL-LEACH	1.1 U	0.92 U	0.96 U	1 U	1.1 U	0.93 U
1,2,4-TRICHLOROBENZENE	660000	5300	NC	22000	5300	FL-LEACH	0.95 U	0.78 U	0.825 U	0.87 U	0.95 U	0.79 U
1,2-DIBROMO-3-CHLOROPROPANE	700	1	NC	5.4	1	FL-LEACH	1.8 U	1.5 U	1.55 U	1.6 U	1.8 U	1.5 U
1,2-DIBROMOETHANE	100	0.1	NC	34	0.1	FL-LEACH	1.4 U	1.2 U	1.25 U	1.3 U	1.4 U	1.2 U

Table A-2
Summary of Phase II Soil Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 8 of 8

LOCATION SAMPLE IDENTIFICATION SAMPLE DATE TOP DEPTH BOTTOM DEPTH	Florida Residential SCTL	Florida Leachability SCTL	Background	USEPA Residential RSL	PAL	PAL Source	JAX45-SB11	JAX45-SB12			JAX45-SB13	JAX45-SB14
							JAX-45-SB11-SB-06242011	JAX-45-SB12-SB-06242011	JAX-45-SB12-SB-06242011-AVG	JAX-45-SB12-SB-06242011-D	JAX-45-SB13-SB-06242011	JAX-45-SB14-SB-06242011
							20110624	20110624	20110624	20110624	20110624	20110624
							0.5	0.5	0.5	0.5	0.5	0.5
							2.5	2.5	2.5	2.5	2.5	2.5
VOLATILES (µg/kg)												
1,2-DICHLOROBENZENE	880000	17000	NC	1900000	17000	FL-LEACH	0.94 U	0.77 U	0.815 U	0.86 U	0.94 U	0.78 U
1,2-DICHLOROETHANE	500	10	NC	430	10	FL-LEACH	1.2 U	0.99 U	1.045 U	1.1 U	1.2 U	1 U
1,2-DICHLOROPROPANE	600	30	NC	940	30	FL-LEACH	1.7 U	1.4 U	1.45 U	1.5 U	1.7 U	1.4 U
1,3-DICHLOROBENZENE	380000	7000	NC	NC	7000	FL-LEACH	0.74 U	0.61 U	0.645 U	0.68 U	0.74 U	0.62 U
1,4-DICHLOROBENZENE	6400	2200	NC	2400	2200	FL-LEACH	0.53 U	0.44 U	0.46 U	0.48 U	0.53 U	0.44 U
2-BUTANONE	16000000	17000	NC	28000000	17000	FL-LEACH	7.1 U	5.8 U	6.15 U	6.5 U	7.1 U	5.9 U
2-HEXANONE	24000	1400	NC	210000	1400	FL-LEACH	5.8 U	4.8 U	5.05 U	5.3 U	5.8 U	4.8 U
4-METHYL-2-PENTANONE	4300000	2600	NC	5300000	2600	FL-LEACH	7.1 U	5.8 U	6.15 U	6.5 U	7.1 U	5.9 U
ACETONE	11000000	25000	NC	61000000	25000	FL-LEACH	12 U	8.1 U	8.9 U	9.7 U	9.6 U	8.8 U
BENZENE	1200	7	NC	1100	7	FL-LEACH	1.1 U	0.91 U	0.955 U	1 U	1.1 U	0.92 U
BROMODICHLOROMETHANE	1500	4	NC	270	4	FL-LEACH	0.72 U	0.59 U	0.625 U	0.66 U	0.72 U	0.6 U
BROMOFORM	48000	30	NC	62000	30	FL-LEACH	0.84 U	0.69 U	0.73 U	0.77 U	0.84 U	0.7 U
BROMOMETHANE	3100	50	NC	7300	50	FL-LEACH	1.3 U	1.1 U	1.15 U	1.2 U	1.3 U	1.1 U
CARBON DISULFIDE	270000	5600	NC	820000	5600	FL-LEACH	3 U	2.5 U	2.65 U	2.8 U	3 U	2.5 U
CARBON TETRACHLORIDE	500	40	NC	610	40	FL-LEACH	1.6 U	1.3 U	1.35 U	1.4 U	1.6 U	1.3 U
CHLOROBENZENE	120000	1300	NC	290000	1300	FL-LEACH	0.61 U	0.5 U	0.53 U	0.56 U	0.61 U	0.51 U
CHLORODIBROMOMETHANE	1500	3	NC	680	3	FL-LEACH	1.2 U	0.99 U	1.045 U	1.1 U	1.2 U	1 U
CHLOROETHANE	3900	60	NC	15000000	60	FL-LEACH	1.6 U	1.3 U	1.35 U	1.4 U	1.6 U	1.3 U
CHLOROFORM	400	400	NC	290	290	RSL	0.42 U	0.35 U	0.365 U	0.38 U	0.42 U	0.35 U
CHLOROMETHANE	4000	10	NC	120000	10	FL-LEACH	1.7 U	1.4 U	1.45 U	1.5 U	1.7 U	1.4 U
CIS-1,2-DICHLOROETHENE	33000	400	NC	160000	400	FL-LEACH	1.1 U	0.9 U	0.95 U	1 U	1.1 U	0.91 U
CIS-1,3-DICHLOROPROPENE	NC	NC	NC	1700	1700	RSL	0.86 U	0.71 U	0.75 U	0.79 U	0.86 U	0.72 U
CYCLOHEXANE	NC	NC	NC	7000000	7000000	RSL	1.7 U	1.4 U	1.45 U	1.5 U	1.7 U	1.4 U
DICHLORODIFLUOROMETHANE	77000	44000	NC	94000	44000	FL-LEACH	1.1 U	0.91 U	0.955 U	1 U	1.1 U	0.92 U
ETHYLBENZENE	1500000	600	NC	5400	600	FL-LEACH	0.78 U	0.64 U	0.68 U	0.72 U	0.78 U	0.65 U
ISOPROPYLBENZENE	220000	200	NC	2100000	200	FL-LEACH	1.1 U	0.91 U	0.955 U	1 U	1.1 U	0.92 U
METHYL ACETATE	6800000	16000	NC	78000000	16000	FL-LEACH	3.2 U	2.7 U	2.85 U	3 U	3.2 U	2.7 U
METHYL CYCLOHEXANE	NC	NC	NC	NC	NC	NC	1.2 U	0.95 U	0.975 U	1 U	1.2 U	0.96 U
METHYL TERT-BUTYL ETHER	4400000	90	NC	43000	90	FL-LEACH	1.3 U	1.1 U	1.15 U	1.2 U	1.3 U	1.1 U
METHYLENE CHLORIDE	17000	20	NC	11000	20	FL-LEACH	9.5 U	7.8 U	8.25 U	8.7 U	9.5 U	7.9 U
STYRENE	3600000	3600	NC	6300000	3600	FL-LEACH	0.61 U	0.5 U	0.53 U	0.56 U	0.61 U	0.51 U
TETRACHLOROETHENE	8800	30	NC	550	30	FL-LEACH	7.2	2.6 J	2.35	2.1 J	3.5 J	1.2 U
TOLUENE	7500000	500	NC	5000000	500	FL-LEACH	1.7 U	1.4 U	1.45 U	1.5 U	1.7 U	1.4 U
TOTAL XYLENES	130000	200	NC	630000	200	FL-LEACH	1.6 U	1.3 U	1.35 U	1.4 U	1.6 U	1.3 U
TRANS-1,2-DICHLOROETHENE	53000	700	NC	150000	700	FL-LEACH	0.85 U	0.7 U	0.74 U	0.78 U	0.85 U	0.71 U
TRANS-1,3-DICHLOROPROPENE	NC	NC	NC	1700	1700	RSL	1 U	0.85 U	0.9 U	0.95 U	1 U	0.86 U
TRICHLOROETHENE	6400	30	NC	910	30	FL-LEACH	0.71 U	0.58 U	0.615 U	0.65 U	0.71 U	0.59 U
TRICHLOROFLUOROMETHANE	270000	33000	NC	790000	33000	FL-LEACH	1.1 U	0.9 U	0.95 U	1 U	1.1 U	0.91 U
VINYL CHLORIDE	200	7	NC	60	7	FL-LEACH	1 U	0.86 U	0.91 U	0.96 U	1 U	0.87 U

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 1 of 12

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA Tap RSL	JAX45-DPT12				JAX45-DPT13				JAX45-DPT14	
					JAX-45-DPT12-12- 06202011	JAX-45-DPT12-20- 06202011	JAX-45-DPT12-40- 06202011	JAX-45-DPT12-60- 06202011	JAX-45-DPT13-12- 06202011	JAX-45-DPT13-20- 06202011	JAX-45-DPT13-40- 06202011	JAX-45-DPT13-60- 06202011	JAX-45-DPT14-12- 06202011	
					20110620	20110620	20110620	20110620	20110620	20110620	20110620	20110620	20110620	
VOLATILES (UG/L)														
1,1,1-TRICHLOROETHANE	200	GCTL	200	7500	0.2 U									
1,1,2,2-TETRACHLOROETHANE	0.066	RSL	0.2	0.066	0.38 U									
1,1,2-TRICHLOROETHANE	0.24	RSL	5	0.24	0.33 U									
1,1,2-TRICHLOROTRIFLUOROETHANE	53000	RSL	210000	53000	0.31 U									
1,1-DICHLOROETHANE	2.4	RSL	70	2.4	7.9	4.2	6.8	0.21 U	4.2	2	0.21 U	0.21 U	0.21 U	
1,1-DICHLOROETHENE	7	GCTL	7	260	56	40	67	0.35 U	6.5	3.2	0.44 J	0.35 U	0.35 U	
1,2,4-TRICHLOROBENZENE	0.99	RSL	70	0.99	0.37 U									
1,2-DIBROMO-3-CHLOROPROPANE	0.00032	RSL	0.2	0.00032	0.5 U									
1,2-DIBROMOETHANE	0.0065	RSL	0.02	0.0065	0.22 U									
1,2-DICHLOROBENZENE	280	RSL	600	280	0.15 U	0.15 U	0.15 U	0.15 U	0.36 J	0.15 U	0.15 U	0.15 U	0.15 U	
1,2-DICHLOROETHANE	0.15	RSL	3	0.15	47	37	65	0.2 U	3.2	1.6	0.2 U	0.2 U	0.2 U	
1,2-DICHLOROPROPANE	0.38	RSL	5	0.38	0.25 U									
1,3-DICHLOROBENZENE	210	GCTL	210	NC	0.26 U									
1,4-DICHLOROBENZENE	0.42	RSL	75	0.42	0.24 U									
2-BUTANONE	4200	GCTL	4200	4900	1.3 U	1.3 U	1.3 U	1.3 U	1.3 UJ	1.3 U	1.3 U	1.3 U	1.3 U	
2-HEXANONE	34	RSL	280	34	1.7 U									
4-METHYL-2-PENTANONE	560	GCTL	560	1000	1.3 U									
ACETONE	6300	GCTL	6300	12000	2.2 UJ	3.3 J	2.2 UJ	2.2 UJ	2.2 UJ					
BENZENE	0.39	RSL	1	0.39	0.34 J	0.76 J	0.36 J	0.26 U	0.41 J	0.32 J	0.26 U	0.26 U	0.26 U	
BROMODICHLOROMETHANE	0.12	RSL	0.6	0.12	0.33 U									
BROMOFORM	4.4	GCTL	4.4	7.9	0.23 U									
BROMOMETHANE	7	RSL	9.8	7	0.49 U									
CARBON DISULFIDE	700	GCTL	700	720	0.38 J	0.25 U	0.35 J	0.25 U	0.56 J	0.46 J	2.8	0.42 J	0.25 U	
CARBON TETRACHLORIDE	0.39	RSL	3	0.39	0.22 U	0.22 U	0.22 U	0.22 U	0.95 J	54	860	0.22 U	0.22 U	
CHLOROBENZENE	72	RSL	100	72	0.22 U									
CHLORODIBROMOMETHANE	0.15	RSL	0.4	0.15	0.3 U									
CHLOROETHANE	12	GCTL	12	21000	0.55 U	0.55 U	0.55 U	0.55 U	0.55 UJ	0.55 U	0.55 U	0.55 U	0.55 U	
CHLOROFORM	0.19	RSL	70	0.19	0.32 U	0.32 U	0.32 U	0.32 U	5.8	500	900	2.8	0.32 U	
CHLOROMETHANE	2.7	GCTL	2.7	190	0.36 U	0.36 U	0.36 U	0.36 U	0.62 J	0.36 U	0.36 U	0.36 U	0.36 U	
CIS-1,2-DICHLOROETHENE	28	RSL	70	28	150	46	34	0.21 U	43	21	0.21 U	0.36 J	0.53 J	
CIS-1,3-DICHLOROPROPENE	0.41	RSL	NC	0.41	0.19 U									
CYCLOHEXANE	13000	RSL	NC	13000	0.31 U									
DICHLORODIFLUOROMETHANE	190	RSL	1400	190	0.24 U									
ETHYLBENZENE	1.3	RSL	30	1.3	0.21 U									
ISOPROPYLBENZENE	0.8	GCTL	0.8	390	0.23 U									
METHYL ACETATE	3000	GCTL	3000	16000	0.53 U									
METHYL CYCLOHEXANE	NC	GCTL	NC	NC	0.3 U	0.4 J	0.3 U	0.3 U						
METHYL TERT-BUTYL ETHER	12	RSL	20	12	0.36 U									
METHYLENE CHLORIDE	4.7	RSL	5	4.7	1.1 U	1.7 J	6.1	1.1 U	1.1 U					
STYRENE	100	GCTL	100	1100	0.23 U									
TETRACHLOROETHENE	0.072	RSL	3	0.072	0.4 U	5.4	13	0.4 U	0.4 U					

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 2 of 12

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA Tap RSL	JAX45-DPT12				JAX45-DPT13				JAX45-DPT14
					JAX-45-DPT12-12- 06202011	JAX-45-DPT12-20- 06202011	JAX-45-DPT12-40- 06202011	JAX-45-DPT12-60- 06202011	JAX-45-DPT13-12- 06202011	JAX-45-DPT13-20- 06202011	JAX-45-DPT13-40- 06202011	JAX-45-DPT13-60- 06202011	JAX-45-DPT14-12- 06202011
					20110620	20110620	20110620	20110620	20110620	20110620	20110620	20110620	20110620
VOLATILES (UG/L)													
TOLUENE	40	GCTL	40	860	0.27 U	1.3	4.6	0.27 U	0.27 U				
TOTAL XYLEMES	20	GCTL	20	190	0.25 U	6.2	0.25 U	0.25 U					
TRANS-1,2-DICHLOROETHENE	86	RSL	100	86	7.7	0.64 J	0.25 U	0.25 U	4.2	1.4	0.25 U	0.25 U	0.25 U
TRANS-1,3-DICHLOROPROPENE	NC	GCTL	NC	NC	0.2 U								
TRICHLOROETHENE	0.44	RSL	3	0.44	4.7	21	46	0.28 U	24	11	0.4 J	0.28 U	0.28 U
TRICHLOROFLUOROMETHANE	1100	RSL	2100	1100	0.24 U								
VINYL CHLORIDE	0.015	RSL	1	0.015	5.5	1.1 J	0.54 J	0.25 U	2.9	1.2 J	0.25 U	0.25 U	0.25 U

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 3 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 4 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 5 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45
Naval Air Station Jacksonville
Jacksonville, Florida
Page 6 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 7 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 8 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 9 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 10 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 11 of 12

Table A-3
Summary of Phase II Groundwater Analytical Results

Remedial Investigation Report, PSC 45

Naval Air Station Jacksonville

Jacksonville, Florida

Page 12 of 12

LOCATION SAMPLE IDENTIFICATION	PAL	PAL Source	Florida GCTL	USEPA Tap RSL	JAX45-DPT21			JAX45-DPT22			
					JAX-45-DPT21-20-06222011	JAX-45-DPT21-40-06222011	JAX-45-DPT21-60-06222011	JAX-45-DPT22-12-06232011	JAX-45-DPT22-20-06232011	JAX-45-DPT22-40-06232011	JAX-45-DPT22-60-06232011
					20110622	20110622	20110622	20110623	20110623	20110623	20110623
VOLATILES (UG/L)											
TOLUENE	40	GCTL	40	860	0.27 U						
TOTAL XYLEMES	20	GCTL	20	190	0.25 U						
TRANS-1,2-DICHLOROETHENE	86	RSL	100	86	0.25 U	0.25 U	0.25 U	3.6	10	0.6 J	0.25 U
TRANS-1,3-DICHLOROPROPENE	NC	GCTL	NC	NC	0.2 U						
TRICHLOROETHENE	0.44	RSL	3	0.44	0.28 U	1.7	0.28 U	58	5.8	19	0.28 U
TRICHLOROFLUOROMETHANE	1100	RSL	2100	1100	0.24 U						
VINYL CHLORIDE	0.015	RSL	1	0.015	0.25 U	0.25 U	0.25 U	1.6 J	0.73 J	0.25 U	0.25 U



Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: A. PATE **DATE:** JULY 7, 2011

FROM: JOSEPH KALINYAK **COPIES:** DV FILE

SUBJECT: ORGANIC DATA VALIDATION – VOC / SVOC / PAH / PCB / PET
INORGANIC DATA VALIDATION – METALS
NAS JACKSONVILLE, CTO 0112
SAMPLE DELIVERY GROUP (SDG) – JAX001

SAMPLES: 5 / Aqueous / VOC

JAX-45-B200-MW01D-20110504	JAX-45-B200-MW01S-20110504
JAX-45-B200-MW02D-20110504	JAX-45-B200-MW02S-20110504
TRIP BLANK	

4 / Aqueous / SVOC / PAH / PCB / PET / METALS

JAX-45-B200-MW01D-20110504	JAX-45-B200-MW01S-20110504
JAX-45-B200-MW02D-20110504	JAX-45-B200-MW02S-20110504

Overview

The sample set for NAS Jacksonville, CTO 0112, SDG JAX001 consisted of four (4) aqueous environmental samples and one (1) aqueous QC trip blank sample. The samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), polynuclear aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), petroleum extractable (PET), and metals as indicated above. No field duplicate sample pairs were included in the Sample Delivery Group (SDG).

The samples were collected by Tetra Tech NUS on May 4, 2011 and analyzed by Katahdin Analytical Services. The analysis was conducted in accordance with SW-846 Method 8260B, 8270C Full Scan, 8270C SIM, 8082, 6010, 7470A, and FL-PRO analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- * • Data Completeness
- * • Holding Times
- Initial and Continuing Calibration
- * • Laboratory Blank Analyses - Organic
- Initial / Continuing / Preparation Blank Results - Metals
- * • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

VOC

The initial calibration relative standard deviation (RSD) was greater than the 15% quality control limit for chlorodibromomethane and bromoform on instrument GCMS-T on 05/05/11 affecting sample JAX-45-B200-MW02D-20110504 dilution analysis. Non-detected dibromochloromethane and bromoform sample results were reported from the undiluted sample analysis and no validation action was taken.

TO: A. PATE
SDG: JAX01

PAGE 2

The continuing calibration verification (CCV) percent difference (%D) was greater than the 20% quality control limit for chloroethane for instrument GCMS-S on 05/06/11 @ 19:22 affecting samples TRIP BLANK, JAX-45-B200-MW01D-20110504, JAX-45-B200-MW01S-20110504, JAX-45-B200-MW02D-20110504, and JAX-45-B200-MW02S-20110504. The non-detected chloroethane results for the aforementioned samples were qualified estimated, (UJ).

The CCV %D was greater than the 20% quality control limit for trichlorofluoromethane for instrument GCMS-T on 05/10/11 @ 11:23 affecting sample JAX-45-B200-MW02D-20110504 dilution analysis. The non-detected trichlorofluoromethane sample result was reported from the undiluted sample analysis and no validation action was taken.

SVOC

The initial calibration RSD was greater than the 15% quality control limit for 4-nitrophenol, benzaldehyde, and atrazine on instrument GCMS-U on 04/27/11 affecting all samples. The non-detected 4-nitrophenol, benzaldehyde, and atrazine sample results were qualified estimated, (UJ).

The CCV %D was greater than the 20% quality control limit for benzaldehyde for instrument GCMS-U on 05/11/11 @ 08:26 affecting all samples. The non-detected benzaldehyde results for the samples were qualified estimated, (UJ).

PAH

No issues were identified.

PCB

Aroclor CCV average %Ds were greater than the 15% quality control limit for Aroclor-1016 and Aroclor-1260 on 05/06/11 @ 09:50 and for Aroclor-1016 on 05/06/11 @ 17:01 on analytical column ZB-MULTIRESIDUE1 on instrument GC07 affecting the analysis of all samples. No validation action was taken as the alternate column CCV average %Ds were within the quality control limits and all sample Aroclor results were non-detected.

PET

No issues were identified.

METALS

The following contaminants were detected in the laboratory method or preparation blanks at the following maximum concentrations:

<u>Analyte</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
Potassium	78.26 µg/L	391.30 µg/L
Sodium	77.60 µg/L	388.00 µg/L
Iron	16.37 µg/L	81.8 µg/L
Antimony	1.979 µg/L	9.895 µg/L
Calcium	144.50 µg/L	722.50 µg/L
Magnesium	7.824 µg/L	39.120 µg/L

An action level of 5X the maximum contaminant level has been used to evaluate sample data for

TO: A. PATE
SDG: JAX01

PAGE 3

blank contamination. Sample aliquot and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. The positive antimony result in sample JAX-45-B200-MW02D-20110504 was qualified non-detected, (U), as a result of blank contamination.

Additional Comments

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) were qualified as estimated, (J).

VOC sample JAX-45-B200-MW02D-20110504 was analyzed at a 10X dilution in order to quantify 1,1-dichloroethene and trichloroethene. 1,1-Dichloroethene and trichloroethene results were reported from the 10X dilution. All VOC other analytes were reported from the undiluted sample analysis.

Sample JAX-45-B200-MW01S-20110504 was analyzed both undiluted and diluted 10X for PAH analytes that exceeded the highest calibration level for the undiluted PAH sample analysis. Only the analyte results that exceeded the highest calibration level for the undiluted PAH analysis were reported from the 10X dilution PAH analysis.

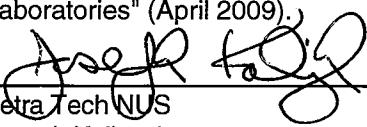
Sample JAX-45-B200-MW01S-20110504 was analyzed at a 2X dilution for PET.

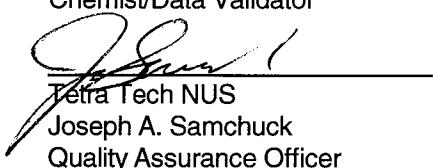
Executive Summary

Laboratory Performance: SVOC initial calibration RSDs greater than the quality control limit resulted in the qualification of SVOC analytes. VOC and SVOC CCV %Ds greater than the quality control limit resulted in qualification of VOC and SVOC analytes.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), the "National Functional Guidelines for Inorganic Review", October 2004, and Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009).


Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator


Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL_CODE)

A	= Lab Blank Contamination
B	= Field Blank Contamination
C	= Calibration Noncompliance (e.g. % RSDs, %Fs, ICSs, CCVs, HEPFs, etc.)
C01	= GCMS Tuning Noncompliance
D	= MS/MSD Recovery Noncompliance
E	= LC/LCSD Recovery Noncompliance
F	= Lab Duplicate Imprecision
G	= Field Duplicate Imprecision
H	= Holding Time Exceedance
I	= ICP Serial Dilution Noncompliance
J	= GFQA PDS - GFQA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K	= ICP Interference - includes ICS % R Noncompliance
L	= Instrument Calibration Range Exceedance
M	= Sample Preparation Noncompliance
N	= Internal Standard Noncompliance
N01	= Internal Standard Recovery Noncompliance Dioxins
N02	= Recovery Standard Noncompliance Dioxins
N03	= Clean-up Standard Noncompliance Dioxins
O	= Poor Instrument Performance (e.g. base-line drifting)
P	= Uncertainty near detection limit (< 2 x IDL for inorganics and < C90L for organics)
Q	= Other problems (can encompass a number of issues; e.g. chromatography, interferences, etc.)
R	= Surrogates Recovery Noncompliance
S	= Pesticide/PCB Resolution
T	= % Breakdown Noncompliance for DDT and Endrin
U	= % Difference between columns/detectors >25% for positive results determined via GC(HPLC)
V	= Non-linear calibrations; correlation coefficient r < 0.995
W	= EMPC result
X	= Signal-to-noise response drop
Y	= Percent solids <30%
Z	= Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 01511 SDG: JAX01 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX-45-B200-MW01D-20110504		JAX-45-B200-MW01S-20110504		JAX-45-B200-MW02D-20110504		JAX-45-B200-MW02D-20110504DL		
	LAB_ID	SE2433-2		SE2433-1		SE2433-4		SE2433-4DL		
	SAMP_DATE	5/4/2011		5/4/2011		5/4/2011		5/4/2011		
	QC_TYPE	NM		NM		NM		NM		
	UNITS	UG/L		UG/L		UG/L		UG/L		
	PCT_SOLIDS	0.0		0.0		0.0		0.0		
	DUP_OF									
	PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE		0.21	U		0.21	U		56		
1,1-DICHLOROETHENE		0.35	U		0.35	U				750
1,2,4-TRICHLOROBENZENE		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE		0.15	U		8.6			0.15	U	
1,2-DICHLOROETHANE		0.2	U		0.2	U		20		
1,2-DICHLOROPROPANE		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE		0.24	U		1.7			0.24	U	
2-BUTANONE		1.3	U		1.3	U		1.3	U	
2-HEXANONE		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE		1.3	U		1.3	U		1.3	U	
ACETONE		2.2	U		2.2	U		2.2	U	
BENZENE		0.26	U		0.34	J	P	1.1		
BROMODICHLOROMETHANE		0.33	U		0.33	U		0.33	U	
BROMOFORM		0.23	U		0.23	U		0.23	U	
BROMOMETHANE		0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE		0.25	U		0.25	U		0.25	U	
CARBON TETRACHLORIDE		0.22	U		0.22	U		0.22	U	
CHLOROBENZENE		0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE		0.3	U		0.3	U		0.3	U	
CHLOROETHANE		0.55	UJ	C	0.55	UJ	C	0.55	UJ	C
CHLOROFORM		0.32	U		0.32	U		0.32	U	
CHLOROMETHANE		0.36	U		0.36	U		0.36	U	
CIS-1,2-DICHLOROETHENE		0.21	U		13			2.2		
CIS-1,3-DICHLOROPROPENE		0.19	U		0.19	U		0.19	U	
CYCLOHEXANE		0.31	U		1.6			0.31	U	
DICHLORODIFLUOROMETHANE		0.24	U		0.24	U		0.24	U	
ETHYLBENZENE		0.21	U		10			0.21	U	
ISOPROPYLBENZENE		0.23	U		3.5			0.23	U	

PROJ_NO: 01511 SDG: JAX01 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX-45-B200-MW02S-20110504		TRIP BLANK		
	LAB_ID	SE2433-3			SE2433-5	
	SAMP_DATE	5/4/2011			5/1/2011	
	QC_TYPE	NM			NM	
	UNITS	UG/L			UG/L	
	PCT_SOLIDS	0.0			0.0	
	DUP_OF					
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.38	J	P	0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U	
2-BUTANONE	1.3	U		1.3	U	
2-HEXANONE	1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U	
ACETONE	2.2	U		2.2	U	
BENZENE	0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U	
CARBON DISULFIDE	0.25	U		0.25	U	
CARBON TETRACHLORIDE	0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C
CHLOROFORM	0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U	
CYCLOHEXANE	0.31	U		0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U	

PROJ_NO: 01511 SDG: JAX01 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX-45-B200-MW01D-20110504	JAX-45-B200-MW01S-20110504			JAX-45-B200-MW02D-20110504			JAX-45-B200-MW02D-20110504DL			
	LAB_ID	SE2433-2	SE2433-1			SE2433-4			SE2433-4DL			
	SAMP_DATE	5/4/2011	5/4/2011			5/4/2011			5/4/2011			
	QC_TYPE	NM	NM			NM			NM			
	UNITS	UG/L	UG/L			UG/L			UG/L			
	PCT_SOLIDS	0.0	0.0			0.0			0.0			
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U				
METHYL CYCLOHEXANE	0.3	U		3.4			0.3	U				
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U				
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U				
STYRENE	0.23	U		0.23	U		0.23	U				
TETRACHLOROETHENE	0.4	U		16			0.4	U				
TOLUENE	0.27	U		24			0.36	J	P			
TOTAL XYLEMES	0.25	U		44			0.25	U				
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U				
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U				
TRICHLOROETHENE	0.28	U		2.3						390		
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U				
VINYL CHLORIDE	0.25	U		0.25	U		0.7	J	P			

PROJ_NO: 01511 SDG: JAX01 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX-45-B200-MW02S-20110504		TRIP BLANK		
	LAB_ID	SE2433-3			SE2433-5	
	SAMP_DATE	5/4/2011			5/1/2011	
	QC_TYPE	NM			NM	
	UNITS	UG/L			UG/L	
	PCT_SOLIDS	0.0			0.0	
	DUP_OF					
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U	
TOTAL XYLENES	0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U	
TRICHLOROETHENE	0.31	J	P	0.28	U	
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U	

PROJ_NO: 01511 SDG: JAX01 FRACTION: OS MEDIA: WATER	NSAMPLE	JAX-45-B200-MW01D-20110504		JAX-45-B200-MW01S-20110504		JAX-45-B200-MW02D-20110504		JAX-45-B200-MW02S-20110504	
	LAB_ID	SE2433-2		SE2433-1		SE2433-4		SE2433-3	
	SAMP_DATE	5/4/2011		5/4/2011		5/4/2011		5/4/2011	
	QC_TYPE	NM		NM		NM		NM	
	UNITS	UG/L		UG/L		UG/L		UG/L	
	PCT_SOLIDS	0.0		0.0		0.0		0.0	
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL	2.7	U		3.4	J	P	2.6	U	
2,2'-OXYBIS(1-CHLOROPROPANE)	2.1	U		2.2	U		2	U	
2,4,5-TRICHLOROPHENOL	3.6	U		3.7	U		3.5	U	
2,4,6-TRICHLOROPHENOL	2.7	U		2.8	U		2.6	U	
2,4-DICHLOROPHENOL	3	U		3.1	U		2.9	U	
2,4-DIMETHYLPHENOL	4.4	U		12			4.2	U	
2,4-DINITROPHENOL	1	U		1	U		0.96	U	
2,4-DINITROTOLUENE	2.2	U		2.3	U		2.1	U	
2,6-DINITROTOLUENE	2	U		2.1	U		1.9	U	
2-CHLORONAPHTHALENE	2.9	U		3	U		2.8	U	
2-CHLOROPHENOL	3.2	U		3.3	U		3.1	U	
2-METHYLPHENOL	3.8	U		3.9	U		3.6	U	
2-NITROANILINE	1.8	U		1.8	U		1.7	U	
2-NITROPHENOL	2.7	U		2.8	U		2.6	U	
3&4-METHYLPHENOL	5.6	U		5.8	U		5.4	U	
3,3'-DICHLOROBENZIDINE	1.1	U		1.1	U		1	U	
3-NITROANILINE	1.5	U		1.5	U		1.4	U	
4,6-DINITRO-2-METHYLPHENOL	2	U		2.1	U		1.9	U	
4-BROMOPHENYL PHENYL ETHER	1.9	U		2	U		1.8	U	
4-CHLORO-3-METHYLPHENOL	3.6	U		3.7	U		3.5	U	
4-CHLOROANILINE	1.9	U		2	U		1.8	U	
4-CHLOROPHENYL PHENYL ETHER	2.2	U		2.3	U		2.1	U	
4-NITROANILINE	1.6	U		1.6	U		1.5	U	
4-NITROPHENOL	1.8	UJ	C	1.8	UJ	C	1.7	UJ	C
ACETOPHENONE	3.9	U		4	U		3.8	U	
ATRAZINE	3.3	UJ	C	3.4	UJ	C	3.2	UJ	C
BENZALDEHYDE	1	UJ	C	1	UJ	C	0.96	UJ	C
BIS(2-CHLOROETHOXY)METHANE	2.1	U		2.2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2.1	U		1.9	U	
BIS(2-ETHYLHEXYL)PHTHALATE	1.7	U		1.8	U		1.6	U	
BUTYL BENZYL PHTHALATE	1.9	U		2	U		1.8	U	
CAPROLACTAM	0.4	U		0.41	U		0.38	U	
CARBAZOLE	2.1	U		2.2	U		2	U	
DIBENZOFURAN	1.6	U		1.6	U		1.5	U	
DIETHYL PHTHALATE	2	U		2.1	U		1.9	U	

PROJ_NO: 01511 SDG: JAX01 FRACTION: OS MEDIA: WATER	NSAMPLE	JAX-45-B200-MW01D-20110504	JAX-45-B200-MW01S-20110504	JAX-45-B200-MW02D-20110504	JAX-45-B200-MW02S-20110504							
	LAB_ID	SE2433-2	SE2433-1	SE2433-4	SE2433-3							
	SAMP_DATE	5/4/2011	5/4/2011	5/4/2011	5/4/2011							
	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DIMETHYL PHTHALATE	2 U			2.1 U			1.9 U			2 U		
DI-N-BUTYL PHTHALATE	2.5 U			4.1 J	P		2.4 U			2.5 U		
DI-N-OCTYL PHTHALATE	1.8 U			1.8 U			1.7 U			1.8 U		
HEXACHLOROBENZENE	2.1 U			2.2 U			2 U			2.1 U		
HEXACHLOROBUTADIENE	1.8 U			1.8 U			1.7 U			1.8 U		
HEXACHLOROCYCLOPENTADIENE	1.2 U			1.2 U			1.2 U			1.2 U		
HEXACHLOROETHANE	2.3 U			2.4 U			2.2 U			2.3 U		
ISOPHORONE	1.7 U			1.8 U			1.6 U			1.7 U		
NITROBENZENE	3.1 U			3.2 U			3 U			3.1 U		
N-NITROSO-DI-N-PROPYLAMINE	2 U			2.1 U			1.9 U			2 U		
N-NITROSODIPHENYLAMINE	3.7 U			3.8 U			3.6 U			3.7 U		
PENTACHLOROPHENOL	2.3 U			2.4 U			2.2 U			2.3 U		
PHENOL	1.8 U			1.8 U			1.7 U			1.8 U		

PROJ_NO: 01511 SDG: JAX01 FRACTION: PAH MEDIA: WATER	NSAMPLE	JAX-45-B200-MW01D-20110504		JAX-45-B200-MW01S-20110504		JAX-45-B200-MW01S-20110504DL		JAX-45-B200-MW02D-20110504				
	LAB_ID	SE2433-2		SE2433-1		SE2433-1DL2		SE2433-4				
	SAMP_DATE	5/4/2011		5/4/2011		5/4/2011		5/4/2011				
	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/L		UG/L		UG/L		UG/L				
	PCT_SOLIDS	0.0		0.0		0.0		0.0				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1-METHYLNAPHTHALENE	0.069	U					12			0.065	U	
2-METHYLNAPHTHALENE	0.078	U					9.3			0.074	U	
ACENAPHTHENE	0.065	U		0.085	J	P				0.062	U	
ACENAPHTHYLENE	0.054	U		0.056	U					0.052	U	
ANTHRACENE	0.044	U		0.045	U					0.042	U	
BENZO(A)ANTHRACENE	0.046	U		0.047	U					0.14	J	P
BENZO(A)PYRENE	0.067	U		0.068	U					0.063	U	
BENZO(B)FLUORANTHENE	0.09	U		0.092	U					0.086	U	
BENZO(G,H,I)PERYLENE	0.066	U		0.067	U					0.062	U	
BENZO(K)FLUORANTHENE	0.049	U		0.05	U					0.047	U	
CHRYSENE	0.036	U		0.037	U					0.035	U	
DIBENZO(A,H)ANTHRACENE	0.071	U		0.072	U					0.067	U	
FLUORANTHENE	0.074	U		0.075	U					0.07	U	
FLUORENE	0.062	U		0.081	J	P				0.059	U	
INDENO(1,2,3-CD)PYRENE	0.052	U		0.054	U					0.05	U	
NAPHTHALENE	0.065	U					52			0.062	U	
PHENANTHRENE	0.052	U		0.052	U					0.049	U	
PYRENE	0.06	U		0.061	U					0.057	U	

PROJ_NO: 01511	NSAMPLE	JAX-45-B200-MW02S-20110504	
SDG: JAX01	LAB_ID	SE2433-3	
FRACTION: PAH	SAMP_DATE	5/4/2011	
MEDIA: WATER	QC_TYPE	NM	
	UNITS	UG/L	
	PCT_SOLIDS	0.0	
	DUP_OF		
PARAMETER	RESULT	VQL	QLCD
1-METHYLNAPHTHALENE	0.069	U	
2-METHYLNAPHTHALENE	0.078	U	
ACENAPHTHENE	0.065	U	
ACENAPHTHYLENE	0.054	U	
ANTHRACENE	0.044	U	
BENZO(A)ANTHRACENE	0.046	U	
BENZO(A)PYRENE	0.16	J	P
BENZO(B)FLUORANTHENE	0.09	U	
BENZO(G,H,I)PERYLENE	0.066	U	
BENZO(K)FLUORANTHENE	0.049	U	
CHRYSENE	0.036	U	
DIBENZO(A,H)ANTHRACENE	0.071	U	
FLUORANTHENE	0.074	U	
FLUORENE	0.062	U	
INDENO(1,2,3-CD)PYRENE	0.052	U	
NAPHTHALENE	0.065	U	
PHENANTHRENE	0.052	U	
PYRENE	0.06	U	

PROJ_NO: 01511	NSAMPLE	JAX-45-B200-MW01D-20110504	JAX-45-B200-MW01S-20110504			JAX-45-B200-MW02D-20110504			JAX-45-B200-MW02S-20110504			
SDG: JAX01	LAB_ID	SE2433-2	SE2433-1			SE2433-4			SE2433-3			
FRACTION: PCB	SAMP_DATE	5/4/2011	5/4/2011			5/4/2011			5/4/2011			
MEDIA: WATER	QC_TYPE	NM	NM			NM			NM			
	UNITS	UG/L	UG/L			UG/L			UG/L			
	PCT_SOLIDS	0.0	0.0			0.0			0.0			
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016	0.15	U		0.16	U		0.15	U		0.14	U	
AROCLOR-1221	0.2	U		0.22	U		0.21	U		0.19	U	
AROCLOR-1232	0.091	U		0.096	U		0.092	U		0.086	U	
AROCLOR-1242	0.18	U		0.19	U		0.18	U		0.17	U	
AROCLOR-1248	0.2	U		0.22	U		0.21	U		0.19	U	
AROCLOR-1254	0.084	U		0.088	U		0.084	U		0.079	U	
AROCLOR-1260	0.17	U		0.18	U		0.18	U		0.16	U	

PROJ_NO: 01511	NSAMPLE	JAX-45-B200-MW01D-20110504	JAX-45-B200-MW01S-20110504	JAX-45-B200-MW02D-20110504	JAX-45-B200-MW02S-20110504							
SDG: JAX01	LAB_ID	SE2433-2	SE2433-1DL	SE2433-4	SE2433-3							
FRACTION: PET	SAMP_DATE	5/4/2011	5/4/2011	5/4/2011	5/4/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C08-C40)	140	U		12000			310	J	P	140	U	

PROJ_NO: 01511	NSAMPLE	JAX-45-B200-MW01D-20110504	JAX-45-B200-MW01S-20110504	JAX-45-B200-MW02D-20110504	JAX-45-B200-MW02S-20110504
SDG: JAX01	LAB_ID	SE2433-002	SE2433-001	SE2433-004	SE2433-003
FRACTION: M	SAMP_DATE	5/4/2011	5/4/2011	5/4/2011	5/4/2011
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM
	UNITS	UG/L	UG/L	UG/L	UG/L
	PCT_SOLIDS	0.0	0.0	0.0	0.0
	DUP_OF				
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL
ALUMINUM	218	J	P	251	J
ANTIMONY	1.28	U		1.28	U
ARSENIC	1.43	U		1.7	J
BARIUM	34.2			20.3	
BERYLLIUM	0.1	U		0.1	U
CADMIUM	0.05	U		0.05	U
CALCIUM	8760		96600		8420
CHROMIUM	0.88	J	P	2.6	J
COBALT	3.7	J	P	0.39	J
COPPER	0.63	U		1.5	J
IRON	1210		4860		19800
LEAD	1.07	U		1.1	J
MAGNESIUM	2050		5850		2310
MANGANESE	160		231		179
MERCURY	0.01	U		0.01	U
NICKEL	1.6	J	P	0.64	J
POTASSIUM	1190		5490		1410
SELENIUM	2.36	U		2.36	U
SILVER	0.27	U		0.27	U
SODIUM	9220		8520		8160
THALLIUM	1.07	U		1.07	U
VANADIUM	0.29	J	P	1.1	J
ZINC		17.5	J	11.7	J



Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: A. PATE **DATE:** AUGUST 16, 2011

FROM: JOSEPH KALINYAK **COPIES:** DV FILE

SUBJECT: INORGANIC DATA VALIDATION – TAL METALS, TOTAL SOLIDS
NAS JACKSONVILLE, CTO 0112
SAMPLE DELIVERY GROUP (SDG) – JAX004

SAMPLES: 11 / Soil / METALS

JAX45-DUP01-06242011	JAX45-SB05-SB-06242011	JAX45-SB06-SB-06242011
JAX45-SB07-SB-06242011	JAX45-SB08-SB-06242011	JAX45-SB09-SB-06242011
JAX45-SB10-SB-06242011	JAX45-SB11-SB-06242011	JAX45-SB12-SB-06242011
JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011	

Overview

The sample set for NAS Jacksonville, CTO 0112, SDG JAX004 consisted of eleven (11) soil samples. The samples were analyzed for metals as indicated above. One (1) field duplicate sample pair was included in the Sample Delivery Group (SDG); JAX45-DUP01-06242011 / JAX45-SB12-SB-06242011.

The samples were collected by Tetra Tech NUS on June 23 and 24, 2011 and analyzed by Katahdin Analytical Services. The analysis was conducted in accordance with SW-846 Method 6010 and 7471B analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- * • Data Completeness
- * • Holding Times
- * • Initial / Continuing Calibration
- Laboratory / Continuing / Preparation Blank Results
- Field Duplicate Results
- * • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

METALS

The following contaminants were detected in the laboratory method/preparation blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level (mg/kg)
Vanadium ⁽¹⁾	0.456 µg/L	0.228
Potassium ⁽¹⁾	422.7 µg/L	211.35
Beryllium ⁽¹⁾	0.053 µg/L	0.027
Barium ⁽²⁾	0.051 mg/kg	0.255

Calcium ⁽²⁾	13.00 mg/kg	65.00
Chromium ⁽²⁾	0.173 mg/kg	0.865
Iron ⁽²⁾	4.398 mg/kg	21.99
Magnesium ⁽²⁾	4.449 mg/kg	22.245
Nickel ⁽²⁾	0.100 mg/kg	0.500
Thallium ⁽²⁾	0.104 mg/kg	0.520
Sodium ⁽²⁾	11.78 mg/kg	58.9
Mercury ⁽³⁾	0.007 mg/kg	0.035

- (1) Maximum concentration present in a method/continuing calibration blanks affecting all soil samples.
(2) Maximum concentration present in a preparation blank PBSBF27ICS0 affecting all soil samples.
(3) Maximum concentration present in a preparation blank PBSBF29HGS0 affecting all soil samples.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Positive results less than the blank action level for beryllium, chromium, mercury, nickel, potassium, and sodium were qualified "U" as a result of laboratory blank contamination.

The relative percent difference (RPD) was greater than the 50% quality control limit for aluminum, barium, cadmium, chromium, iron, lead, magnesium, and zinc for the field duplicate samples JAX45-DUP01-06242011 and JAX45-SB12-SB-06242011. The positive aforementioned metals were qualified estimated, (J).

Additional Comments

Positive results reported below the Limit of Quantitation (LOQ) but above the method detection limit (MDL) were qualified as estimated, (J).

Executive Summary

Laboratory Performance: Sample results were qualified for blank contamination.

Other Factors Affecting Data Quality: Positive results reported below the Limit of Quantitation (LOQ) but above the method detection limit (MDL) were qualified as estimated, (J). Sample metal results were qualified for field duplicate RPD quality control limit non-compliances.

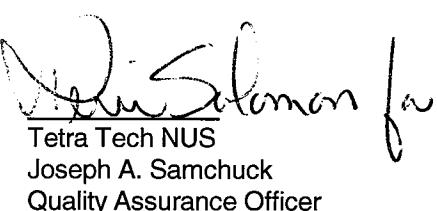
TO: A. PATE
SDG: JAX04

PAGE 3

The data for these analyses were reviewed with reference to the EPA National Functional Guidelines for Inorganic Data Validation (10/2004), USEPA SW-846 Methods 6010 and 7471B, and Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009).



Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator



Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

A	= Lab Blank Contamination
B	= Field Blank Contamination
C	= Calibration Noncompliance (e.g. % RSDs, %Es, ICVs, CCVs, HEPFs, etc.)
D ₀₁	= GC/MS Tuning Noncompliance
D	= MS/MSD Recovery Noncompliance
E	= LC/MS/LC/SD Recovery Noncompliance
F	= Lab Duplicate Imprecision
G	= Field Duplicate Imprecision
H	= Holding Time Exceedance
I	= ICP Serial Dilution Noncompliance
J	= GFQA PDS - GFQA MSA's $r < 0.995$, ICP PDS Recovery Noncompliance
K	= ICP Interference - includes ICS % R Noncompliance
L	= Instrumental Calibration Range Exceedance
M	= Sample Preparation Noncompliance
N	= Internal Standard Noncompliance
N ₀₁	= Internal Standard Recovery Noncompliance Dioxins
N ₀₂	= Recovery Standard Noncompliance Dioxins
N ₀₃	= Clean-up Standard Noncompliance Dioxins
O	= Poor Instrument Performance (e.g. base-line drifting)
P	= Uncertainty near detection limit (< 2 x IDL for inorganics and < CPOL for organics)
Q	= Other problems (can encompass a number of issues; e.g. chromatography, interferences, etc.)
R	= Surrogates Recovery Noncompliance
S	= Pesticide/PCB Resolution
T	= % Breakdown Noncompliance for DDT and Endrin
U	= % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	= Non-linear calibrations; correlation coefficient $r < 0.995$
W	= EMPC result
X	= Signal to noise response drop
Y	= Percent solids <30%
Z	= Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 01511 SDG: JAX04 FRACTION: M MEDIA: SOIL	NSAMPLE	JAX45-DUP01-06242011		JAX45-SB05-SB-06242011		JAX45-SB06-SB-06242011		JAX45-SB07-SB-06242011		
	LAB_ID	SE3674-013		SE3674-005		SE3674-006		SE3674-007		
	SAMP_DATE	6/24/2011		6/23/2011		6/24/2011		6/24/2011		
	QC_TYPE	NM		NM		NM		NM		
	UNITS	MG/KG		MG/KG		MG/KG		MG/KG		
	PCT_SOLIDS	92.8		72.3		85.7		82.2		
	DUP_OF	JAX45-SB12-SB-06242011								
	PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		689	J	G	1980	J	G	2730	J	G
ANTIMONY		0.06	U		0.08	U		0.06	U	
ARSENIC		0.68			0.54	J	P	0.64	J	P
BARIUM		7.3	J	G	7.4	J	G	6.3	J	G
BERYLLIUM		0.02	U	A	0.05	J	P	0.06	J	P
CADMIUM		3.6	J	G	0.7	J	GP	0.37	J	GP
CALCIUM		5020			3420			1630		11400
CHROMIUM		2.6	J	G	4.7	J	G	3.4	J	G
COBALT		0.1	J	P	0.21	J	P	0.13	J	P
COPPER		25.8			4.1			3.2		7.2
IRON		840	J	G	615	J	G	1040	J	G
LEAD		17.9	J	G	22.5	J	G	14	J	G
MAGNESIUM		72.1	J	G	117	J	G	136	J	G
MANGANESE		53.6			9.8			14.2		25.6
MERCURY		0.04			0.02	U	A	0.02	U	A
NICKEL		0.82	J	P	1.3	J	P	1.1	J	P
POTASSIUM		25.8	U	A	56.6	U	A	74	U	A
SELENIUM		0.14	U		0.2	U		0.15	U	
SILVER		0.02	U		0.03	U		0.02	U	
SODIUM		32.6	U	A	30.9	U	A	37.1	U	A
THALLIUM		0.07	U		0.1	U		0.08	U	
VANADIUM		4			2.1	J	P	3		4
ZINC		114	J	G	24.8	J	G	24.7	J	G

PROJ_NO: 01511 SDG: JAX04 FRACTION: M MEDIA: SOIL	NSAMPLE	JAX45-SB08-SB-06242011		JAX45-SB09-SB-06242011		JAX45-SB10-SB-06242011		JAX45-SB11-SB-06242011	
	LAB_ID	SE3674-008		SE3674-009		SE3674-010		SE3674-011	
	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011		6/24/2011	
	QC_TYPE	NM		NM		NM		NM	
	UNITS	MG/KG		MG/KG		MG/KG		MG/KG	
	PCT_SOLIDS	94.7		85.8		82.3		83.5	
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM	209	J	G	3770	J	G	2060	J	G
ANTIMONY	0.06	U		0.07	U		0.06	U	
ARSENIC	0.56	J	P	0.82			0.74		
BARIUM	4.8	J	G	7.9	J	G	4.8	J	G
BERYLLIUM	0.02	U	A	0.07	J	P	0.03	J	P
CADMIUM	0.05	J	GP	0.06	J	GP	0.05	J	GP
CALCIUM	766			16000			5870		61000
CHROMIUM	0.64	U	A	4.1	J	G	2.6	J	G
COBALT	0.03	U		0.18	J	P	0.08	J	P
COPPER	1.8	J	P	4.1			1.8	J	
IRON	193	J	G	1010	J	G	396	J	G
LEAD	4.9	J	G	5.4	J	G	3.2	J	G
MAGNESIUM	26	J	G	274	J	G	128	J	G
MANGANESE	6.7			10.7			6.8		23
MERCURY	0.02	U	A	0.02	U	A	0.02	U	A
NICKEL	0.12	U	A	1	J	P	0.74	J	P
POTASSIUM	19.3	U	A	124	U	A	58.8	U	A
SELENIUM	0.16	U		0.17	U		0.15	U	
SILVER	0.02	U		0.03	U		0.02	U	
SODIUM	19.5	U	A	32.4	U	A	25.9	U	A
THALLIUM	0.08	U		0.08	U		0.07	U	
VANADIUM	0.81	J	P	4.4			2.1	J	
ZINC	1.7	J	GP	14.9	J	G	6.6	J	G

PROJ_NO: 01511	NSAMPLE	JAX45-SB12-SB-06242011		JAX45-SB13-SB-06242011		JAX45-SB14-SB-06242011			
SDG: JAX04	LAB_ID	SE3674-012		SE3674-014		SE3674-015			
FRACTION: M	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011			
MEDIA: SOIL	QC_TYPE	NM		NM		NM			
	UNITS	MG/KG		MG/KG		MG/KG			
	PCT_SOLIDS	93.0		79.6		86.0			
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM	1730	J	G	4000	J	G	4070	J	G
ANTIMONY	0.08	J	P	0.08	J	P	0.07	U	
ARSENIC	0.81	J	P	0.58	J	P	0.8	J	P
BARIUM	19.2	J	G	11	J	G	7.2	J	G
BERYLLIUM	0.15	J	P	0.09	J	P	0.06	J	P
CADMIUM	15.8	J	G	1.2	J	G	0.14	J	GP
CALCIUM	8340			6550			987		
CHROMIUM	28.9	J	G	6.7	J	G	4.5	J	G
COBALT	1.3	J	P	0.39	J	P	0.17	J	P
COPPER	24.4			5.2			4.2		
IRON	2320	J	G	1010	J	G	1860	J	G
LEAD	136	J	G	30.4	J	G	9.6	J	G
MAGNESIUM	451	J	G	232	J	G	160	J	G
MANGANESE	70.7			17.9			13.8		
MERCURY	0.07			0.03	U	A	0.04	U	A
NICKEL	3.9	J	P	1.9	J	P	1.2	J	P
POTASSIUM	100	U	A	101	U	A	90.1	U	A
SELENIUM	0.18	U		0.13	U		0.18	U	
SILVER	0.08	J	P	0.03	J	P	0.07	J	P
SODIUM	27.2	U	A	30.5	U	A	30.2	U	A
THALLIUM	0.09	U		0.07	U		0.09	U	
VANADIUM	10			3.9			5.3		
ZINC	623	J	G	42.3	J	G	12.9	J	G

PROJ_NO: 01511	NSAMPLE	JAX45-DUP01-06242011			JAX45-SB05-SB-06242011			JAX45-SB06-SB-06242011			JAX45-SB07-SB-06242011		
SDG: JAX04	LAB_ID	SE3674-13			SE3674-5			SE3674-6			SE3674-7		
FRACTION: MISC	SAMP_DATE	6/24/2011			6/23/2011			6/24/2011			6/24/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	92.8			72.3			85.7			82.2		
	DUP_OF	JAX45-SB12-SB-06242011											
PARAMETER		RESULT	VQL	QLCD									
TOTAL SOLIDS		93			72			86			82		

PROJ_NO: 01511	NSAMPLE	JAX45-SB08-SB-06242011			JAX45-SB09-SB-06242011			JAX45-SB10-SB-06242011			JAX45-SB11-SB-06242011		
SDG: JAX04	LAB_ID	SE3674-8			SE3674-9			SE3674-10			SE3674-11		
FRACTION: MISC	SAMP_DATE	6/24/2011			6/24/2011			6/24/2011			6/24/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	94.7			85.8			82.3			83.5		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD									
TOTAL SOLIDS		95			86			82			83		

PROJ_NO: 01511	NSAMPLE	JAX45-SB12-SB-06242011	JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011	TB-03
SDG: JAX04	LAB_ID	SE3674-12	SE3674-14	SE3674-15	SE3674-17
FRACTION: MISC	SAMP_DATE	6/24/2011	6/24/2011	6/24/2011	6/24/2011
MEDIA: SOIL	QC_TYPE	NM	NM	NM	NM
	UNITS	%	%	%	%
	PCT_SOLIDS	93.0	79.6	86.0	100.0
	DUP_OF				
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL
TOTAL SOLIDS		93		80	
				86	
				86	
				100	
					100
					100
					100



Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: A. PATE **DATE:** AUGUST 15, 2011
FROM: JOSEPH KALINYAK **COPIES:** DV FILE
SUBJECT: ORGANIC DATA VALIDATION – VOC / SVOC / PAH / PCB / TPH
NAS JACKSONVILLE, CTO 0112
SAMPLE DELIVERY GROUP (SDG) – JAX004

SAMPLES:

6 / Aqueous / VOC

JAX45-DPT22-12-06232011	JAX45-DPT22-20-06232011	JAX45-DPT22-40-06232011
JAX45-DPT22-60-06232011	JAX45-SBRINSATE-06242011	TB-04

12 / Soil / VOC

JAX45-DUP01-06242011	JAX45-SB05-SB-06242011	JAX45-SB06-SB-06242011
JAX45-SB07-SB-06242011	JAX45-SB08-SB-06242011	JAX45-SB09-SB-06242011
JAX45-SB10-SB-06242011	JAX45-SB11-SB-06242011	JAX45-SB12-SB-06242011
JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011	TB-03

11 / Soil / SVOC / PAH / PCB / PET

JAX45-DUP01-06242011	JAX45-SB05-SB-06242011	JAX45-SB06-SB-06242011
JAX45-SB07-SB-06242011	JAX45-SB08-SB-06242011	JAX45-SB09-SB-06242011
JAX45-SB10-SB-06242011	JAX45-SB11-SB-06242011	JAX45-SB12-SB-06242011
JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011	

Overview

The sample set for NAS Jacksonville, CTO 0112, SDG JAX004 consisted of six (6) aqueous samples including one (1) aqueous QC trip blank sample and one (1) QC rinsate blank sample, twelve (12) soil samples including one (1) QC soil trip blank sample. The samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), polynuclear aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), and total petroleum hydrocarbons (TPH) as indicated above. One (1) field duplicate sample pair was included in the Sample Delivery Group (SDG); JAX45-DUP01-06242011 / JAX45-SB12-SB-06242011.

The samples were collected by Tetra Tech NUS on June 23 and 24, 2011 and analyzed by Katahdin Analytical Services. The analysis was conducted in accordance with SW-846 Method 8260B, 8270C Full Scan, 8270C Selective Ion Monitoring (SIM), 8082, and FL-PRO analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

- * • Data Completeness
- * • Holding Times
- Initial and Continuing Calibration
- Laboratory Blank Analyses
- * • Field Duplicate Imprecision

TO: A. PATE
SDG: JAX04

PAGE 2

* • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

VOC

The following VOC contaminants were detected in the trip blanks and the method blanks at the following maximum concentrations.

<u>Analyte</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
2-Butanone ⁽¹⁾	2.0 µg/L	20.0 µg/L
Acetone ⁽¹⁾	5.8 µg/L	58.0 µg/L
Carbon disulfide ⁽²⁾	1.2 µg/kg	6.0 µg/kg
Acetone ⁽²⁾	7.8 µg/kg	78.0 µg/kg

(1) Trip blank TB-04 affecting all aqueous samples.

(2) Trip blank TB-03 affecting all soil samples.

An action level of ten times the maximum level for the common laboratory contaminants acetone and 2-butanone, and five times the maximum level for carbon disulfide has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids, and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. The maximum acetone concentration was chosen from the trip blank and method blanks for qualifying sample data. Positive sample results less than the action level were qualified non-detected, (U). The sample rinsate blank, JAX45-SBRINSATE-06242011, was not qualified for trip blank or method blank contamination.

The initial calibration relative standard deviation (RSD) was greater than the 15% quality control limit for acetone on instrument GCMS-D on 06/28/11.

Affecting samples: All SDG aqueous samples.

Action: The positive and non-detected results for acetone for the aforementioned samples were qualified estimated, (J) and (UJ), respectively, except for sample JAX45-DPT22-20-06232011 which was qualified non-detected for trip blank contamination.

The continuing calibration verification (CCV) percent difference (%D) was greater than the 20% quality control limit for acetone for instrument GCMS-C on 06/29/11 @ 09:37.

Affecting samples:

JAX45-DUP01-06242011	JAX45-SB05-SB-06242011	JAX45-SB06-SB-06242011
JAX45-SB07-SB-06242011	JAX45-SB09-SB-06242011	JAX45-SB10-SB-06242011
JAX45-SB11-SB-06242011	JAX45-SB12-SB-06242011	JAX45-SB13-SB-06242011
JAX45-SB14-SB-06242011	TB-03	

Action: The positive acetone result for sample TB-03 was qualified estimated, (J). No action was taken for the remainder of the sample acetone results as they were qualified non-detected for trip blank contamination.

TO: A. PATE
SDG: JAX04

PAGE 3

SVOC

The continuing CCV %D was greater than the 20% quality control limit for 2,2'-oxybis(1-chloropropane) for instrument GCMS-U on 06/29/11 @ 14:40.

Affecting samples:

JAX45-SB05-SB-06242011 JAX45-SB06-SB-06242011 JAX45-SB07-SB-06242011
JAX45-SB08-SB-06242011 JAX45-SB09-SB-06242011 JAX45-SB10-SB-06242011
JAX45-SB11-SB-06242011 JAX45-SB14-SB-06242011

Action: The non-detected 2,2'-oxybis(1-chloropropane) results for the aforementioned samples were qualified estimated, (UJ).

The continuing CCV %Ds were greater than the 20% quality control limit for 2,2'-oxybis(1-chloropropane), n-nitroso-di-n-propylamine, and benzaldehyde for instrument GCMS-U on 06/30/11 @ 07:26.

Affecting samples:

JAX45-SB12-SB-06242011 JAX45-SB13-SB-06242011 JAX45-DUP01-06242011

Action: The non-detected 2,2'-oxybis(1-chloropropane), n-nitroso-di-n-propylamine, and benzaldehyde results for the aforementioned samples were qualified estimated, (UJ).

PAH

The continuing CCV %D was greater than the 20% quality control limit for indeno(1,2,3-cd)pyrene for instrument GCMS-G on 06/29/11 @ 14:13.

Affecting samples:

JAX45-SB05-SB-06242011 JAX45-SB07-SB-06242011 JAX45-SB09-SB-06242011
JAX45-SB10-SB-06242011 JAX45-SB11-SB-06242011 JAX45-SB12-SB-06242011
JAX45-DUP01-06242011 JAX45-SB13-SB-06242011 JAX45-SB14-SB-06242011

Action: The positive indeno(1,2,3-cd)pyrene results for the aforementioned samples were qualified estimated, (J).

The continuing CCV %Ds were greater than the 20% quality control limit for phenanthrene, pyrene, benzo(a)anthracene, and indeno(1,2,3-cd)pyrene for instrument GCMS-G on 06/30/11 @ 08:45.

Affecting samples:

JAX45-SB06-SB-06242011DL JAX45-SB07-SB-06242011DL JAX45-SB11-SB-06242011DL
JAX45-DUP01-06242011DL JAX45-SB08-SB-06242011 JAX45-SB09-SB-06242011RA

Action: The positive PAH results reported from the aforementioned samples were qualified estimated as indicated below. PAH results not qualified were reported from the undiluted sample analysis, and the initial sample analysis in the case of sample JAX45-SB09-SB-06242011RA.

Sample	Analytes reported and qualified
JAX45-SB06-SB-06242011DL	benzo(a)anthracene, phenanthrene, and pyrene
JAX45-SB11-SB-06242011DL	phenanthrene and pyrene
JAX45-SB08-SB-06242011	phenanthrene, pyrene, benzo(a)anthracene, and indeno(1,2,3-cd)pyrene

The sample JAX45-SB09-SB-06242011 was re-analyzed due to a internal standard recovery quality control limit non-compliance. The re-analysis had a similar internal standard recovery quality control limit non-compliance. Only the original sample analysis for JAX45-SB09-SB-06242011 was reported. The sample PAH analytes associated with the internal standard were not qualified for this quality control limit non-compliance as this was a limited data validation review.

TO: A. PATE
SDG: JAX04

PAGE 4

The matrix spike (MS) and MS duplicate (MSD) %Rs were quality control limit non-compliant for a number of PAH analytes for spiked sample JAX45-SB13-SB-06242011. Some of the PAH analyte %Rs were less than 10% for the MS for the sample. As this was a limited data validation review the MS/MSD results were casually reviewed for very significant issues only. However, as the MS %Rs for the analytes phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd), and benzo(g,h,i)perylene were less than 10%, the sample JAX45-SB13-SB-06242011 PAH positive results for the aforementioned analytes were qualified estimated, (J).

PCB

The Aroclor-1016 and Aroclor-1260 CCV average %Ds were greater than the 20% quality control limit for instrument GC07 for dates/times and analytical columns as listed below.

Date/Time	Analyte	RTX-CLPESTICIDES	RTX-CLPESTICIDES2
06/28/11 @ 17:56	Aroclor-1260	21.90% average	-----
06/29/11 @ 00:23	Aroclor-1016	33.99% average	27.82% average
	Aroclor-1260	34.40% average	45.54% average

Affecting samples:

JAX45-SB05-SB-06242011 JAX45-SB06-SB-06242011 JAX45-SB07-SB-06242011

Action: The affected samples had non-detected results for the aforementioned analytes which were qualified estimated, (UJ).

The Aroclor-1016 average %D was greater than the 20% quality control limit for instrument GC07 for Aroclor-1016 on 06/30/11 @ 11:53 for the RTX-CLPESTICIDES analytical column. No action was taken as the affected samples had non-detected results for Aroclor-1016 and the alternate RTX-CLPESTICIDES2 column had bracketing %Ds within the quality control limits.

PET

No issues were identified.

Additional Comments

Positive results reported below the Limit of Quantitation (LOQ) but above the method detection limit (MDL) were qualified as estimated, (J).

Sample JAX45-DPT22-12-06232011 was analyzed both undiluted and diluted (10X dilution) for VOC analytes that exceeded the highest calibration level for the undiluted VOC sample analysis. Only the analyte results that exceeded the highest calibration level for the undiluted VOC analysis were reported from the 10X dilution VOC analysis. All other VOC analytes were reported from the undiluted sample analysis.

Sample JAX45-DPT22-20-06232011 was analyzed both undiluted and diluted (4X dilution) for VOC analytes in order to quantify cis-1,2-dichloroethene which exceed the highest calibration level in the undiluted sample. The cis-1,2-dichloroethene result was reported from the 4X dilution. All other VOC analytes were reported from the undiluted sample analysis.

TO: A. PATE
SDG: JAX04

PAGE 5

Samples were analyzed for PAHs both undiluted and diluted as listed below due to analytes that exceeded the highest calibration level for the undiluted PAH sample analysis. Only the PAH analytes results that exceeded the highest calibration level for the undiluted PAH analysis were reported from the dilution analyses.

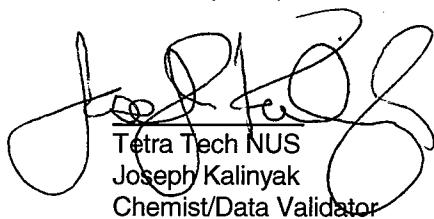
<u>Sample</u>	<u>Dilution</u>
JAX45-SB06-SB-06242011	1X, 3X
JAX45-SB07-SB-06242011	1X, 2X
JAX45-SB11-SB-06242011	1X, 4X
JAX45-DUP01-06242011	1X, 4X

Executive Summary

Laboratory Performance: VOC sample results were qualified for trip blank contamination. A VOC initial calibration acetone RSD was greater than the quality control limit resulting in the qualification of all acetone aqueous sample results. VOC, SVOC, PAH, and PCB CCV %Ds greater than the quality control limit resulted in qualification of VOC, SVOC, PAH, and PCB analytes.

Other Factors Affecting Data Quality: Positive results reported below the LOQ but above the MDL were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), USEPA SW-846 Methods 8260B, 8270C Full Scan, 8270C SIM, 8082, and FL-PRO analytical and reporting protocols, and Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009).



Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator



Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

A	= Lab Blank Contamination
B	= Field Blank Contamination
C	= Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, HFVs, etc.)
CD1	= GC/MS Tuning Noncompliance
D	= MS/MSD Recovery Noncompliance
E	= LC/MS/LC/SD Recovery Noncompliance
F	= Lab Duplicate Imprecision
G	= Field Duplicate Imprecision
H	= Holding Time Exceedance
I	= ICP Serial Dilution Noncompliance
J	= GFAA PDS - GFAA MSAs ($r < 0.995$) / ICP PDS Recovery Noncompliance
K	= ICP Interference - excludes ICS % R Noncompliance
L	= Instrument Calibration Range Exceedance
M	= Sample Preparation Noncompliance
N	= Internal Standard Noncompliance
NO1	= Internal Standard Recovery Noncompliance Dioxins
NO2	= Recovery Standard Noncompliance Dioxins
NO3	= Clean-up Standard Noncompliance Dioxins
O	= Poor Instrument Performance (e.g. base-line drifting)
P	= Uncertainty near detection limit ($< 2 \times \text{IDL}$ for inorganics and $<\text{CRL}$ for organics)
Q	= Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R	= Surrogates Recovery Noncompliance
S	= Pesticide/PCB Resolution
T	= % Breakdown Noncompliance for DDT and Endrin
U	= % Difference between columns/detectors $> 25\%$ for positive results determined via GC/HPLC
V	= Non-linear calibrations; correlation coefficient $r < 0.995$
W	= EMPC result
X	= Signal to noise response drop
Y	= Percent solids $< 30\%$
Z	= Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 01511 SDG: JAX04 FRACTION: OV MEDIA: SOIL	NSAMPLE	JAX45-DUP01-06242011		JAX45-SB05-SB-06242011		JAX45-SB06-SB-06242011		JAX45-SB07-SB-06242011				
	LAB_ID	SE3674-13		SE3674-5		SE3674-6		SE3674-7				
	SAMP_DATE	6/24/2011		6/23/2011		6/24/2011		6/24/2011				
	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG				
	PCT_SOLIDS	92.8		72.3		85.7		82.2				
	DUP_OF	JAX45-SB12-SB-06242011										
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.46	U		0.5	U		0.42	U		0.46	U	
1,1,2,2-TETRACHLOROETHANE	0.92	U		1	U		0.84	U		0.92	U	
1,1,2-TRICHLOROETHANE	1.1	U		1.2	U		0.97	U		1.1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.99	U		1.1	U		0.9	U		0.99	U	
1,1-DICHLOROETHANE	1.9	U		2	U		1.7	U		1.9	U	
1,1-DICHLOROETHENE	1	U		1.1	U		0.93	U		1	U	
1,2,4-TRICHLOROBENZENE	0.87	U		0.95	U		0.79	U		0.87	U	
1,2-DIBROMO-3-CHLOROPROPANE	1.6	U		1.8	U		1.5	U		1.6	U	
1,2-DIBROMOETHANE	1.3	U		1.4	U		1.2	U		1.3	U	
1,2-DICHLOROBENZENE	0.86	U		0.94	U		0.78	U		0.86	U	
1,2-DICHLOROETHANE	1.1	U		1.2	U		1	U		1.1	U	
1,2-DICHLOROPROPANE	1.5	U		1.7	U		1.4	U		1.5	U	
1,3-DICHLOROBENZENE	0.68	U		0.74	U		0.62	U		0.68	U	
1,4-DICHLOROBENZENE	0.48	U		0.53	U		0.44	U		0.48	U	
2-BUTANONE	6.5	U		7.1	U		5.9	U		6.5	U	
2-HEXANONE	5.3	U		5.8	U		4.8	U		5.3	U	
4-METHYL-2-PENTANONE	6.5	U		7.1	U		5.9	U		6.5	U	
ACETONE	9.7	U	B	33	U	B	14	U	B	10	U	B
BENZENE	1	U		1.1	U		0.92	U		1	U	
BROMODICHLOROMETHANE	0.66	U		0.72	U		0.6	U		0.66	U	
BROMOFORM	0.77	U		0.84	U		0.7	U		0.77	U	
BROMOMETHANE	1.2	U		1.3	U		1.1	U		1.2	U	
CARBON DISULFIDE	2.8	U	B	3	U	B	2.5	U	B	2.8	U	B
CARBON TETRACHLORIDE	1.4	U		1.6	U		1.3	U		1.4	U	
CHLOROBENZENE	0.56	U		0.61	U		0.51	U		0.56	U	
CHLORODIBROMOMETHANE	1.1	U		1.2	U		1	U		1.1	U	
CHLOROETHANE	1.4	U		1.6	U		1.3	U		1.4	U	
CHLOROFORM	0.38	U		0.42	U		0.35	U		0.38	U	
CHLOROMETHANE	1.5	U		1.7	U		1.4	U		1.5	U	
CIS-1,2-DICHLOROETHENE	1	U		1.1	U		0.91	U		1	U	
CIS-1,3-DICHLOROPROPENE	0.79	U		0.86	U		0.72	U		0.79	U	
CYCLOHEXANE	1.5	U		1.7	U		1.4	U		1.5	U	
DICHLORODIFLUOROMETHANE	1	U		1.1	U		0.92	U		1	U	
ETHYLBENZENE	0.72	U		0.78	U		0.65	U		0.72	U	
ISOPROPYLBENZENE	1	U		1.1	U		0.92	U		1	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DUP01-06242011		JAX45-SB05-SB-06242011			JAX45-SB06-SB-06242011			JAX45-SB07-SB-06242011		
SDG: JAX04	LAB_ID	SE3674-13		SE3674-5			SE3674-6			SE3674-7		
FRACTION: OV	SAMP_DATE	6/24/2011		6/23/2011			6/24/2011			6/24/2011		
MEDIA: SOIL	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/KG		UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	92.8		72.3			85.7			82.2		
	DUP_OF	JAX45-SB12-SB-06242011										
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	3	U		3.2	U		2.7	U		3	U	
METHYL CYCLOHEXANE	1	U		1.2	U		0.96	U		1	U	
METHYL TERT-BUTYL ETHER	1.2	U		1.3	U		1.1	U		1.2	U	
METHYLENE CHLORIDE	8.7	U		9.5	U		7.9	U		8.7	U	
STYRENE	0.56	U		0.61	U		0.51	U		0.56	U	
TETRACHLOROETHENE	2.1	J	P	1.4	U		1.2	U		1.3	U	
TOLUENE	1.5	U		1.7	U		1.4	U		1.5	U	
TOTAL XYLENES	1.4	U		1.6	U		1.3	U		1.4	U	
TRANS-1,2-DICHLOROETHENE	0.78	U		0.85	U		0.71	U		0.78	U	
TRANS-1,3-DICHLOROPROPENE	0.95	U		1	U		0.86	U		0.95	U	
TRICHLOROETHENE	0.65	U		0.71	U		0.59	U		0.65	U	
TRICHLOROFUOROMETHANE	1	U		1.1	U		0.91	U		1	U	
VINYL CHLORIDE	0.96	U		1	U		0.87	U		0.96	U	

PROJ_NO: 01511 SDG: JAX04 FRACTION: OV MEDIA: SOIL	NSAMPLE	JAX45-SB08-SB-06242011		JAX45-SB09-SB-06242011		JAX45-SB10-SB-06242011		JAX45-SB11-SB-06242011	
	LAB_ID	SE3674-8		SE3674-9		SE3674-10		SE3674-11	
	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011		6/24/2011	
	QC_TYPE	NM		NM		NM		NM	
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG	
	PCT_SOLIDS	94.7		85.8		82.3		83.5	
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.4	U		0.46	U		0.5	U	
1,1,2,2-TETRACHLOROETHANE	0.81	U		0.92	U		1	U	
1,1,2-TRICHLOROETHANE	0.93	U		1.1	U		1.2	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.86	U		0.99	U		1.1	U	
1,1-DICHLOROETHANE	1.6	U		1.9	U		2	U	
1,1-DICHLOROETHENE	0.89	U		1	U		1.1	U	
1,2,4-TRICHLOROBENZENE	0.76	U		0.87	U		0.95	U	
1,2-DIBROMO-3-CHLOROPROPANE	1.4	U		1.6	U		1.8	U	
1,2-DIBROMOETHANE	1.2	U		1.3	U		1.4	U	
1,2-DICHLOROBENZENE	0.75	U		0.86	U		0.94	U	
1,2-DICHLOROETHANE	0.96	U		1.1	U		1.2	U	
1,2-DICHLOROPROPANE	1.3	U		1.5	U		1.7	U	
1,3-DICHLOROBENZENE	0.6	U		0.68	U		0.74	U	
1,4-DICHLOROBENZENE	0.42	U		0.48	U		0.53	U	
2-BUTANONE	5.7	U		6.5	U		7.1	U	
2-HEXANONE	4.6	U		5.3	U		5.8	U	
4-METHYL-2-PENTANONE	5.7	U		6.5	U		7.1	U	
ACETONE	9.1	U	B	9.9	U	B	12	U	B
BENZENE	0.88	U		1	U		1.1	U	
BROMODICHLOROMETHANE	0.58	U		0.66	U		0.72	U	
BROMOFORM	0.67	U		0.77	U		0.84	U	
BROMOMETHANE	1	U		1.2	U		1.3	U	
CARBON DISULFIDE	2.4	U	B	2.8	U	B	3	U	B
CARBON TETRACHLORIDE	1.2	U		1.4	U		1.6	U	
CHLOROBENZENE	0.49	U		0.56	U		0.61	U	
CHLORODIBROMOMETHANE	0.96	U		1.1	U		1.2	U	
CHLOROETHANE	1.2	U		1.4	U		1.6	U	
CHLOROFORM	0.34	U		0.38	U		0.42	U	
CHLOROMETHANE	1.3	U		1.5	U		1.7	U	
CIS-1,2-DICHLOROETHENE	0.87	U		1	U		1.1	U	
CIS-1,3-DICHLOROPROPENE	0.69	U		0.79	U		0.86	U	
CYCLOHEXANE	1.3	U		1.5	U		1.7	U	
DICHLORODIFLUOROMETHANE	0.88	U		1	U		1.1	U	
ETHYLBENZENE	0.62	U		0.72	U		0.78	U	
ISOPROPYLBENZENE	0.88	U		1	U		1.1	U	

PROJ_NO: 01511 SDG: JAX04 FRACTION: OV MEDIA: SOIL	NSAMPLE	JAX45-SB08-SB-06242011		JAX45-SB09-SB-06242011		JAX45-SB10-SB-06242011		JAX45-SB11-SB-06242011		
	LAB_ID	SE3674-8		SE3674-9		SE3674-10		SE3674-11		
	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011		6/24/2011		
	QC_TYPE	NM		NM		NM		NM		
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG		
	PCT_SOLIDS	94.7		85.8		82.3		83.5		
	DUP_OF									
	PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE		2.6	U		3	U		3.2	U	
METHYL CYCLOHEXANE		0.92	U		1	U		1.2	U	
METHYL TERT-BUTYL ETHER		1	U		1.2	U		1.3	U	
METHYLENE CHLORIDE		7.6	U		8.7	U		9.5	U	
STYRENE		0.49	U		0.56	U		0.61	U	
TETRACHLOROETHENE		1.2	U		1.3	U		1.4	U	
TOLUENE		1.3	U		1.5	U		1.7	U	
TOTAL XYLEMES		1.2	U		1.4	U		1.6	U	
TRANS-1,2-DICHLOROETHENE		0.68	U		0.78	U		0.85	U	
TRANS-1,3-DICHLOROPROPENE		0.82	U		0.95	U		1	U	
TRICHLOROETHENE		0.57	U		0.65	U		0.71	U	
TRICHLOROFUOROMETHANE		0.87	U		1	U		1.1	U	
VINYL CHLORIDE		0.84	U		0.96	U		1	U	

PROJ_NO: 01511 SDG: JAX04 FRACTION: OV MEDIA: SOIL	NSAMPLE	JAX45-SB12-SB-06242011	JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011	TB-03							
	LAB_ID	SE3674-12	SE3674-14	SE3674-15	SE3674-17							
	SAMP_DATE	6/24/2011	6/24/2011	6/24/2011	6/24/2011							
	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/KG	UG/KG	UG/KG	UG/KG							
	PCT_SOLIDS	93.0	79.6	86.0	100.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.42	U		0.5	U		0.42	U		0.42	U	
1,1,2,2-TETRACHLOROETHANE	0.83	U		1	U		0.84	U		0.84	U	
1,1,2-TRICHLOROETHANE	0.96	U		1.2	U		0.97	U		0.97	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.89	U		1.1	U		0.9	U		0.9	U	
1,1-DICHLOROETHANE	1.7	U		2	U		1.7	U		1.7	U	
1,1-DICHLOROETHENE	0.92	U		1.1	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE	0.78	U		0.95	U		0.79	U		0.79	U	
1,2-DIBROMO-3-CHLOROPROPANE	1.5	U		1.8	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE	1.2	U		1.4	U		1.2	U		1.2	U	
1,2-DICHLOROBENZENE	0.77	U		0.94	U		0.78	U		0.78	U	
1,2-DICHLOROETHANE	0.99	U		1.2	U		1	U		1	U	
1,2-DICHLOROPROPANE	1.4	U		1.7	U		1.4	U		1.4	U	
1,3-DICHLOROBENZENE	0.61	U		0.74	U		0.62	U		0.62	U	
1,4-DICHLOROBENZENE	0.44	U		0.53	U		0.44	U		0.44	U	
2-BUTANONE	5.8	U		7.1	U		5.9	U		5.9	U	
2-HEXANONE	4.8	U		5.8	U		4.8	U		4.8	U	
4-METHYL-2-PENTANONE	5.8	U		7.1	U		5.9	U		5.9	U	
ACETONE	8.1	U	B	9.6	U	B	8.8	U	B	7.8	J	CP
BENZENE	0.91	U		1.1	U		0.92	U		0.92	U	
BROMODICHLOROMETHANE	0.59	U		0.72	U		0.6	U		0.6	U	
BROMOFORM	0.69	U		0.84	U		0.7	U		0.7	U	
BROMOMETHANE	1.1	U		1.3	U		1.1	U		1.1	U	
CARBON DISULFIDE	2.5	U	B	3	U	B	2.5	U	B	1.2	J	P
CARBON TETRACHLORIDE	1.3	U		1.6	U		1.3	U		1.3	U	
CHLOROBENZENE	0.5	U		0.61	U		0.51	U		0.51	U	
CHLORODIBROMOMETHANE	0.99	U		1.2	U		1	U		1	U	
CHLOROETHANE	1.3	U		1.6	U		1.3	U		1.3	U	
CHLOROFORM	0.35	U		0.42	U		0.35	U		0.35	U	
CHLOROMETHANE	1.4	U		1.7	U		1.4	U		1.4	U	
CIS-1,2-DICHLOROETHENE	0.9	U		1.1	U		0.91	U		0.91	U	
CIS-1,3-DICHLOROPROPENE	0.71	U		0.86	U		0.72	U		0.72	U	
CYCLOHEXANE	1.4	U		1.7	U		1.4	U		1.4	U	
DICHLORODIFLUOROMETHANE	0.91	U		1.1	U		0.92	U		0.92	U	
ETHYLBENZENE	0.64	U		0.78	U		0.65	U		0.65	U	
ISOPROPYLBENZENE	0.91	U		1.1	U		0.92	U		0.92	U	

PROJ_NO: 01511	NSAMPLE	JAX45-SB12-SB-06242011	JAX45-SB13-SB-06242011			JAX45-SB14-SB-06242011			TB-03			
SDG: JAX04	LAB_ID	SE3674-12	SE3674-14			SE3674-15			SE3674-17			
FRACTION: OV	SAMP_DATE	6/24/2011	6/24/2011			6/24/2011			6/24/2011			
MEDIA: SOIL	QC_TYPE	NM	NM			NM			NM			
	UNITS	UG/KG	UG/KG			UG/KG			UG/KG			
	PCT_SOLIDS	93.0	79.6			86.0			100.0			
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	2.7	U		3.2	U		2.7	U		2.7	U	
METHYL CYCLOHEXANE	0.95	U		1.2	U		0.96	U		0.96	U	
METHYL TERT-BUTYL ETHER	1.1	U		1.3	U		1.1	U		1.1	U	
METHYLENE CHLORIDE	7.8	U		9.5	U		7.9	U		7.9	U	
STYRENE	0.5	U		0.61	U		0.51	U		0.51	U	
TETRACHLOROETHENE	2.6	J	P	3.5	J	P	1.2	U		1.2	U	
TOLUENE	1.4	U		1.7	U		1.4	U		1.4	U	
TOTAL XYLEMES	1.3	U		1.6	U		1.3	U		1.3	U	
TRANS-1,2-DICHLOROETHENE	0.7	U		0.85	U		0.71	U		0.71	U	
TRANS-1,3-DICHLOROPROPENE	0.85	U		1	U		0.86	U		0.86	U	
TRICHLOROETHENE	0.58	U		0.71	U		0.59	U		0.59	U	
TRICHLOROFUOROMETHANE	0.9	U		1.1	U		0.91	U		0.91	U	
VINYL CHLORIDE	0.86	U		1	U		0.87	U		0.87	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT22-12-06232011	JAX45-DPT22-12-06232011DL	JAX45-DPT22-20-06232011	JAX45-DPT22-20-06232011DL							
SDG: JAX04	LAB_ID	SE3674-4	SE3674-4DL	SE3674-3	SE3674-3DL							
FRACTION: OV	SAMP_DATE	6/23/2011	6/23/2011	6/23/2011	6/23/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U					0.2	U				
1,1,2,2-TETRACHLOROETHANE	0.38	U					0.38	U				
1,1,2-TRICHLOROETHANE	0.53	J	P				0.33	U				
1,1,2-TRICHLOROTRIFLUOROETHANE				110			0.31	U				
1,1-DICHLOROETHANE	44						14					
1,1-DICHLOROETHENE				260			130					
1,2,4-TRICHLOROBENZENE	0.37	U					0.37	U				
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U					0.5	U				
1,2-DIBROMOETHANE	0.22	U					0.22	U				
1,2-DICHLOROBENZENE	0.15	U					0.15	U				
1,2-DICHLOROETHANE				280			88					
1,2-DICHLOROPROPANE	0.25	U					0.25	U				
1,3-DICHLOROBENZENE	0.26	U					0.26	U				
1,4-DICHLOROBENZENE	0.24	U					0.24	U				
2-BUTANONE	1.3	U					1.3	U				
2-HEXANONE	1.7	U					1.7	U				
4-METHYL-2-PENTANONE	1.3	U					1.3	U				
ACETONE	2.2	UJ	C				4.5	U	B			
BENZENE	1.5						0.52	J	P			
BROMODICHLOROMETHANE	0.33	U					0.33	U				
BROMOFORM	0.23	U					0.23	U				
BROMOMETHANE	0.49	U					0.49	U				
CARBON DISULFIDE	0.25	U					0.63	J	P			
CARBON TETRACHLORIDE	0.22	U					0.22	U				
CHLOROBENZENE	0.22	U					0.22	U				
CHLORODIBROMOMETHANE	0.3	U					0.3	U				
CHLOROETHANE	0.55	U					0.55	U				
CHLOROFORM	0.32	U					0.32	U				
CHLOROMETHANE	0.36	U					0.36	U				
CIS-1,2-DICHLOROETHENE				800						320		
CIS-1,3-DICHLOROPROPENE	0.19	U					0.19	U				
CYCLOHEXANE	0.31	U					0.31	U				
DICHLORODIFLUOROMETHANE	0.24	U					0.24	U				
ETHYLBENZENE	0.21	U					0.21	U				
ISOPROPYLBENZENE	0.23	U					0.23	U				

PROJ_NO: 01511	NSAMPLE	JAX45-DPT22-12-06232011		JAX45-DPT22-12-06232011DL		JAX45-DPT22-20-06232011		JAX45-DPT22-20-06232011DL				
SDG: JAX04	LAB_ID	SE3674-4		SE3674-4DL		SE3674-3		SE3674-3DL				
FRACTION: OV	SAMP_DATE	6/23/2011		6/23/2011		6/23/2011		6/23/2011				
MEDIA: WATER	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/L		UG/L		UG/L		UG/L				
	PCT_SOLIDS	0.0		0.0		0.0		0.0				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U					0.53	U				
METHYL CYCLOHEXANE	0.3	U					0.3	U				
METHYL TERT-BUTYL ETHER	0.36	U					0.36	U				
METHYLENE CHLORIDE	1.1	U					1.1	U				
STYRENE	0.23	U					0.23	U				
TETRACHLOROETHENE	0.4	U					0.4	U				
TOLUENE	0.27	U					0.27	U				
TOTAL XYLEMES	0.25	U					0.25	U				
TRANS-1,2-DICHLOROETHENE	3.6						10					
TRANS-1,3-DICHLOROPROPENE	0.2	U					0.2	U				
TRICHLOROETHENE	58						5.8					
TRICHLOROFLUOROMETHANE	0.24	U					0.24	U				
VINYL CHLORIDE	1.6	J	P				0.73	J	P			

PROJ_NO: 01511 SDG: JAX04 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT22-40-06232011		JAX45-DPT22-60-06232011		JAX45-SBRINSATE-06242011		TB-04		
	LAB_ID	SE3674-2		SE3674-1		SE3674-16		SE3674-18		
	SAMP_DATE	6/23/2011		6/23/2011		6/24/2011		6/24/2011		
	QC_TYPE	NM		NM		NM		NM		
	UNITS	UG/L		UG/L		UG/L		UG/L		
	PCT_SOLIDS	0.0		0.0		0.0		0.0		
	DUP_OF									
	PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE		2.1			0.21	U		0.21	U	
1,1-DICHLOROETHENE		20			0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE		0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE		16			0.2	U		0.2	U	
1,2-DICHLOROPROPANE		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE		0.24	U		0.24	U		0.24	U	
2-BUTANONE		1.3	U		1.3	U		16		2 J P
2-HEXANONE		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE		1.3	U		1.3	U		1.3	U	
ACETONE		2.2	UJ	C	2.2	UJ	C	29	J C	5.8 J C
BENZENE		0.26	U		0.26	U		0.26	U	0.26 U
BROMODICHLOROMETHANE		0.33	U		0.33	U		0.33	U	0.33 U
BROMOFORM		0.23	U		0.23	U		0.23	U	0.23 U
BROMOMETHANE		0.49	U		0.49	U		0.49	U	0.49 U
CARBON DISULFIDE		0.25	U		0.25	U		0.25	U	0.25 U
CARBON TETRACHLORIDE		0.22	U		0.22	U		0.22	U	0.22 U
CHLOROBENZENE		0.22	U		0.22	U		0.22	U	0.22 U
CHLORODIBROMOMETHANE		0.3	U		0.3	U		0.3	U	0.3 U
CHLOROETHANE		0.55	U		0.55	U		0.55	U	0.55 U
CHLOROFORM		0.32	U		0.32	U		0.32	U	0.32 U
CHLOROMETHANE		0.44	J	P	0.36	U		0.4	J P	0.36 U
CIS-1,2-DICHLOROETHENE		11			0.21	U		0.21	U	0.21 U
CIS-1,3-DICHLOROPROPENE		0.19	U		0.19	U		0.19	U	0.19 U
CYCLOHEXANE		0.31	U		0.31	U		0.31	U	0.31 U
DICHLORODIFLUOROMETHANE		0.24	U		0.24	U		0.24	U	0.24 U
ETHYLBENZENE		0.21	U		0.21	U		0.21	U	0.21 U
ISOPROPYLBENZENE		0.23	U		0.23	U		0.23	U	0.23 U

PROJ_NO: 01511 SDG: JAX04 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT22-40-06232011	JAX45-DPT22-60-06232011	JAX45-SBRINSATE-06242011	TB-04							
	LAB_ID	SE3674-2	SE3674-1	SE3674-16	SE3674-18							
	SAMP_DATE	6/23/2011	6/23/2011	6/24/2011	6/24/2011							
	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.6	J	P	0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	19			0.28	U		0.28	U		0.28	U	
TRICHLOROFUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511 SDG: JAX04 FRACTION: PAH MEDIA: SOIL	NSAMPLE	JAX45-DUP01-06242011		JAX45-DUP01-06242011DL			JAX45-SB05-SB-06242011			JAX45-SB06-SB-06242011		
	LAB_ID	SE3674-13		SE3674-13DL			SE3674-5			SE3674-6		
	SAMP_DATE	6/24/2011		6/24/2011			6/23/2011			6/24/2011		
	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/KG		UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	92.8		92.8			72.3			85.7		
	DUP_OF	JAX45-SB12-SB-06242011		JAX45-SB12-SB-06242011								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1-METHYLNAPHTHALENE	3.6	J	P				6.7	J	P	8.9	J	P
2-METHYLNAPHTHALENE	2.6	J	P				7.8	J	P	5.4	J	P
ACENAPHTHENE	13	J	P				17	J	P	68		
ACENAPHTHYLENE	2.8	J	P				2.9	J	P	1.4	U	
ANTHRACENE	18	J	P				12	J	P	57		
BENZO(A)ANTHRACENE	110						68					
BENZO(A)PYRENE	120						87			300		
BENZO(B)FLUORANTHENE	190						150					
BENZO(G,H,I)PERYLENE	70						69			130		
BENZO(K)FLUORANTHENE	69						57			170		
CHRYSENE	120						100					
DIBENZO(A,H)ANTHRACENE	20	J	P				15	J	P	49		
FLUORANTHENE				300			200					
FLUORENE	8.7	J	P				10	J	P	46		
INDENO(1,2,3-CD)PYRENE	100	J	C				100	J	C	240		
NAPHTHALENE	3	J	P				15	J	P	6.3	J	P
PHENANTHRENE	130						150					
PYRENE	200						140					

PROJ_NO: 01511 SDG: JAX04 FRACTION: PAH MEDIA: SOIL	NSAMPLE	JAX45-SB06-SB-06242011DL		JAX45-SB07-SB-06242011			JAX45-SB07-SB-06242011DL			JAX45-SB08-SB-06242011			
	LAB_ID	SE3674-6DL		SE3674-7			SE3674-7DL			SE3674-8			
	SAMP_DATE	6/24/2011		6/24/2011			6/24/2011			6/24/2011			
	QC_TYPE	NM		NM			NM			NM			
	UNITS	UG/KG		UG/KG			UG/KG			UG/KG			
	PCT_SOLIDS	85.7		82.2			82.2			94.7			
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1-METHYLNAPHTHALENE					10	J	P				1.8	U	
2-METHYLNAPHTHALENE					13	J	P				2.3	U	
ACENAPHTHENE					25						4	J	P
ACENAPHTHYLENE					6.3	J	P				11	J	P
ANTHRACENE					12	J	P				6.6	J	P
BENZO(A)ANTHRACENE		280	J	C	130						110	J	C
BENZO(A)PYRENE					170						150		
BENZO(B)FLUORANTHENE		430			280						240		
BENZO(G,H,I)PERYLENE					100						99		
BENZO(K)FLUORANTHENE					86						76		
CHRYSENE		320			170						120		
DIBENZO(A,H)ANTHRACENE					30						34		
FLUORANTHENE		640						340			150		
FLUORENE					16	J	P				3.3	U	
INDENO(1,2,3-CD)PYRENE					150	J	C				150	J	C
NAPHTHALENE					33						2.7	U	
PHENANTHRENE		360	J	C	200						40	J	C
PYRENE		390	J	C	220						110	J	C

PROJ_NO: 01511 SDG: JAX04 FRACTION: PAH MEDIA: SOIL	NSAMPLE	JAX45-SB09-SB-06242011		JAX45-SB10-SB-06242011			JAX45-SB11-SB-06242011			JAX45-SB11-SB-06242011DL		
	LAB_ID	SE3674-9		SE3674-10			SE3674-11			SE3674-11DL		
	SAMP_DATE	6/24/2011		6/24/2011			6/24/2011			6/24/2011		
	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/KG		UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	85.8		82.3			83.5			83.5		
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1-METHYLNAPHTHALENE	1.9	U		1.9	U		7.2	J	P			
2-METHYLNAPHTHALENE	2.5	U		2.5	U		3.5	J	P			
ACENAPHTHENE	1.7	U		1.7	U		37					
ACENAPHTHYLENE	1.4	U		1.3	U		1.4	U				
ANTHRACENE	2.8	J	P	1.3	U		74					
BENZO(A)ANTHRACENE	32			4	J	P	230					
BENZO(A)PYRENE	35			11	J	P	160					
BENZO(B)FLUORANTHENE	52			15	J	P	260					
BENZO(G,H,I)PERYLENE	18	J	P	9.4	J	P	67					
BENZO(K)FLUORANTHENE	18	J	P	5	J	P	88					
CHRYSENE	32			6.1	J	P	200					
DIBENZO(A,H)ANTHRACENE	6.9	J	P	2.8	J	P	26					
FLUORANTHENE	58			7.7	J	P				660		
FLUORENE	3.6	U		3.6	U		27					
INDENO(1,2,3-CD)PYRENE	32	J	C	14	J	CP	120	J	C			
NAPHTHALENE	2.9	U		2.9	U		3	U				
PHENANTHRENE	9.9	J	P	2.2	J	P				360	J	C
PYRENE	34			6	J	P				350	J	C

PROJ_NO: 01511 SDG: JAX04 FRACTION: PAH MEDIA: SOIL	NSAMPLE	JAX45-SB12-SB-06242011		JAX45-SB13-SB-06242011		JAX45-SB14-SB-06242011			
	LAB_ID	SE3674-12		SE3674-14		SE3674-15			
	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011			
	QC_TYPE	NM		NM		NM			
	UNITS	UG/KG		UG/KG		UG/KG			
	PCT_SOLIDS	93.0		79.6		86.0			
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1-METHYLNAPHTHALENE	5.9	J	P	3.2	J	P	2	U	
2-METHYLNAPHTHALENE	5.7	J	P	3	J	P	2.5	U	
ACENAPHTHENE	18	J	P	8.7	J	P	1.7	U	
ACENAPHTHYLENE	2.3	J	P	3.8	J	P	1.4	U	
ANTHRACENE	13	J	P	7.9	J	P	1.4	U	
BENZO(A)ANTHRACENE	82			72	J	D	2.5	J	P
BENZO(A)PYRENE	110			93	J	D	5	J	P
BENZO(B)FLUORANTHENE	190			160	J	D	6.9	J	P
BENZO(G,H,I)PERYLENE	67			78	J	D	5.4	J	P
BENZO(K)FLUORANTHENE	60			49			3.6	U	
CHRYSENE	120			89	J	D	3.4	J	P
DIBENZO(A,H)ANTHRACENE	18	J	P	19	J	P	2.1	U	
FLUORANTHENE	250			150	J	D	5.5	J	P
FLUORENE	14	J	P	6	J	P	3.7	U	
INDENO(1,2,3-CD)PYRENE	99	J	C	96	J	CD	6.6	J	CP
NAPHTHALENE	13	J	P	4	J	P	3	U	
PHENANTHRENE	160			76	J	D	2.2	J	P
PYRENE	160			120	J	D	3.9	J	P

PROJ_NO: 01511 SDG: JAX04 FRACTION: OS MEDIA: SOIL	NSAMPLE	JAX45-DUP01-06242011		JAX45-SB05-SB-06242011			JAX45-SB06-SB-06242011			JAX45-SB07-SB-06242011		
	LAB_ID	SE3674-13		SE3674-5			SE3674-6			SE3674-7		
	SAMP_DATE	6/24/2011		6/23/2011			6/24/2011			6/24/2011		
	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/KG		UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	92.8		72.3			85.7			82.2		
	DUP_OF	JAX45-SB12-SB-06242011										
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL	74	U		99	U		84	U		88	U	
2,2'-OXYBIS(1-CHLOROPROPANE)	90	UJ	C	120	UJ	C	100	UJ	C	110	UJ	C
2,4,5-TRICHLOROPHENOL	160	U		210	U		180	U		190	U	
2,4,6-TRICHLOROPHENOL	160	U		210	U		180	U		190	U	
2,4-DICHLOROPHENOL	150	U		200	U		170	U		180	U	
2,4-DIMETHYLPHENOL	170	U		220	U		190	U		200	U	
2,4-DINITROPHENOL	380	U		510	U		440	U		450	U	
2,4-DINITROTOLUENE	86	U		120	U		98	U		100	U	
2,6-DINITROTOLUENE	80	U		110	U		92	U		95	U	
2-CHLORONAPHTHALENE	88	U		120	U		100	U		100	U	
2-CHLOROPHENOL	160	U		220	U		190	U		200	U	
2-METHYLPHENOL	200	U		270	U		230	U		240	U	
2-NITROANILINE	76	U		100	U		87	U		90	U	
2-NITROPHENOL	170	U		230	U		190	U		200	U	
3&4-METHYLPHENOL	190	U		250	U		220	U		220	U	
3,3'-DICHLOROBENZIDINE	110	U		150	U		130	U		140	U	
3-NITROANILINE	95	U		130	U		110	U		110	U	
4,6-DINITRO-2-METHYLPHENOL	340	U		460	U		390	U		410	U	
4-BROMOPHENYL PHENYL ETHER	86	U		120	U		98	U		100	U	
4-CHLORO-3-METHYLPHENOL	170	U		220	U		190	U		200	U	
4-CHLOROANILINE	120	U		160	U		140	U		140	U	
4-CHLOROPHENYL PHENYL ETHER	78	U		100	U		90	U		94	U	
4-NITROANILINE	130	U		180	U		160	U		160	U	
4-NITROPHENOL	310	U		420	U		360	U		370	U	
ACETOPHENONE	180	U		240	U		210	U		210	U	
ATRAZINE	92	U		120	U		100	U		110	U	
BENZALDEHYDE	120	UJ	C	160	U		140	U		140	U	
BIS(2-CHLOROETHOXY)METHANE	97	U		130	U		110	U		120	U	
BIS(2-CHLOROETHYL)ETHER	82	U		110	U		94	U		98	U	
BIS(2-ETHYLHEXYL)PHTHALATE	230	J	P	130	U		110	U		120	U	
BUTYL BENZYL PHTHALATE	94	U		130	U		110	U		110	U	
CAPROLACTAM	140	U		200	U		170	U		170	U	
CARBAZOLE	110	U		150	U		130	U		130	U	
DIBENZOFURAN	80	U		110	U		92	U		95	U	
DIETHYL PHTHALATE	80	U		110	U		93	U		96	U	

PROJ_NO: 01511 SDG: JAX04 FRACTION: OS MEDIA: SOIL	NSAMPLE	JAX45-SB08-SB-06242011		JAX45-SB09-SB-06242011			JAX45-SB10-SB-06242011			JAX45-SB11-SB-06242011		
	LAB_ID	SE3674-8		SE3674-9			SE3674-10			SE3674-11		
	SAMP_DATE	6/24/2011		6/24/2011			6/24/2011			6/24/2011		
	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/KG		UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.7		85.8			82.3			83.5		
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL	76	U		83	U		82	U		85	U	
2,2'-OXYBIS(1-CHLOROPROPANE)	93	UJ	C	100	UJ	C	100	UJ	C	100	UJ	C
2,4,5-TRICHLOROPHENOL	160	U		180	U		170	U		180	U	
2,4,6-TRICHLOROPHENOL	160	U		180	U		170	U		180	U	
2,4-DICHLOROPHENOL	160	U		170	U		170	U		180	U	
2,4-DIMETHYLPHENOL	170	U		190	U		180	U		190	U	
2,4-DINITROPHENOL	390	U		430	U		420	U		440	U	
2,4-DINITROTOLUENE	89	U		96	U		95	U		99	U	
2,6-DINITROTOLUENE	82	U		89	U		88	U		92	U	
2-CHLORONAPHTHALENE	91	U		98	U		97	U		100	U	
2-CHLOROPHENOL	170	U		180	U		180	U		190	U	
2-METHYLPHENOL	210	U		230	U		220	U		230	U	
2-NITROANILINE	78	U		85	U		84	U		88	U	
2-NITROPHENOL	170	U		190	U		190	U		190	U	
3&4-METHYLPHENOL	200	U		210	U		210	U		220	U	
3,3'-DICHLOROBENZIDINE	120	U		130	U		130	U		130	U	
3-NITROANILINE	98	U		110	U		100	U		110	U	
4,6-DINITRO-2-METHYLPHENOL	350	U		380	U		380	U		390	U	
4-BROMOPHENYL PHENYL ETHER	89	U		96	U		95	U		99	U	
4-CHLORO-3-METHYLPHENOL	170	U		190	U		180	U		190	U	
4-CHLOROANILINE	120	U		130	U		130	U		140	U	
4-CHLOROPHENYL PHENYL ETHER	82	U		88	U		87	U		91	U	
4-NITROANILINE	140	U		150	U		150	U		160	U	
4-NITROPHENOL	320	U		350	U		340	U		360	U	
ACETOPHENONE	190	U		200	U		200	U		210	U	
ATRAZINE	95	U		100	U		100	U		110	U	
BENZALDEHYDE	120	U		140	U		130	U		140	U	
BIS(2-CHLOROETHOXY)METHANE	100	U		110	U		110	U		110	U	
BIS(2-CHLOROETHYL)ETHER	85	U		92	U		90	U		94	U	
BIS(2-ETHYLHEXYL)PHTHALATE	100	U		110	U		110	U		220	J	P
BUTYL BENZYL PHTHALATE	97	U		100	U		100	U		110	U	
CAPROLACTAM	150	U		160	U		160	U		170	U	
CARBAZOLE	120	U		120	U		120	U		130	U	
DIBENZOFURAN	82	U		89	U		88	U		92	U	
DIETHYL PHTHALATE	84	U		90	U		89	U		93	U	

PROJ_NO: 01511	NSAMPLE	JAX45-SB12-SB-06242011		JAX45-SB13-SB-06242011		JAX45-SB14-SB-06242011			
SDG: JAX04	LAB_ID	SE3674-12		SE3674-14		SE3674-15			
FRACTION: OS	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011			
MEDIA: SOIL	QC_TYPE	NM		NM		NM			
	UNITS	UG/KG		UG/KG		UG/KG			
	PCT_SOLIDS	93.0		79.6		86.0			
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL	78	U			86	U		85	U
2,2'-OXYBIS(1-CHLOROPROPANE)	95	UJ	C		100	UJ	C	100	UJ
2,4,5-TRICHLOROPHENOL	170	U			180	U		180	U
2,4,6-TRICHLOROPHENOL	170	U			180	U		180	U
2,4-DICHLOROPHENOL	160	U			180	U		170	U
2,4-DIMETHYLPHENOL	180	U			200	U		190	U
2,4-DINITROPHENOL	400	U			450	U		440	U
2,4-DINITROTOLUENE	91	U			100	U		98	U
2,6-DINITROTOLUENE	85	U			94	U		92	U
2-CHLORONAPHTHALENE	93	U			100	U		100	U
2-CHLOROPHENOL	180	U			190	U		190	U
2-METHYLPHENOL	210	U			240	U		230	U
2-NITROANILINE	80	U			89	U		87	U
2-NITROPHENOL	180	U			200	U		190	U
3&4-METHYLPHENOL	200	U			220	U		220	U
3,3'-DICHLOROBENZIDINE	120	U			140	U		130	U
3-NITROANILINE	100	U			110	U		110	U
4,6-DINITRO-2-METHYLPHENOL	360	U			400	U		390	U
4-BROMOPHENYL PHENYL ETHER	91	U			100	U		98	U
4-CHLORO-3-METHYLPHENOL	180	U			200	U		190	U
4-CHLOROANILINE	130	U			140	U		140	U
4-CHLOROPHENYL PHENYL ETHER	84	U			92	U		90	U
4-NITROANILINE	140	U			160	U		160	U
4-NITROPHENOL	330	U			370	U		360	U
ACETOPHENONE	190	U			210	U		210	U
ATRAZINE	98	U			110	U		100	U
BENZALDEHYDE	130	UJ	C		140	UJ	C	140	U
BIS(2-CHLOROETHOXY)METHANE	100	U			110	U		110	U
BIS(2-CHLOROETHYL)ETHER	87	U			96	U		94	U
BIS(2-ETHYLHEXYL)PHTHALATE	100	U			120	U		110	U
BUTYL BENZYL PHTHALATE	100	U			110	U		110	U
CAPROLACTAM	150	U			170	U		170	U
CARBAZOLE	120	U			130	U		130	U
DIBENZOFURAN	85	U			94	U		92	U
DIETHYL PHTHALATE	86	U			95	U		93	U

PROJ_NO: 01511	NSAMPLE	JAX45-DUP01-06242011			JAX45-SB05-SB-06242011			JAX45-SB06-SB-06242011			JAX45-SB07-SB-06242011		
SDG: JAX04	LAB_ID	SE3674-13			SE3674-5			SE3674-6			SE3674-7		
FRACTION: OS	SAMP_DATE	6/24/2011			6/23/2011			6/24/2011			6/24/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	92.8			72.3			85.7			82.2		
	DUP_OF	JAX45-SB12-SB-06242011											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
DIMETHYL PHTHALATE	78	U			100	U			90	U		94	U
DI-N-BUTYL PHTHALATE	100	U			140	U			120	U		120	U
DI-N-OCTYL PHTHALATE	210	U			290	U			240	U		250	U
HEXACHLOROBENZENE	82	U			110	U			95	U		99	U
HEXACHLOROBUTADIENE	84	U			110	U			96	U		100	U
HEXACHLOROCYCLOPENTADIENE	82	U			110	U			95	U		99	U
HEXACHLOROETHANE	97	U			130	U			110	U		120	U
ISOPHORONE	76	U			100	U			87	U		90	U
NITROBENZENE	92	U			120	U			100	U		110	U
N-NITROSO-DI-N-PROPYLAMINE	84	UJ	C		110	U			96	U		100	U
N-NITROSODIPHENYLAMINE	220	U			300	U			250	U		260	U
PENTACHLOROPHENOL	240	U			320	U			270	U		280	U
PHENOL	160	U			210	U			180	U		190	U

PROJ_NO: 01511 SDG: JAX04 FRACTION: OS MEDIA: SOIL	NSAMPLE	JAX45-SB08-SB-06242011			JAX45-SB09-SB-06242011			JAX45-SB10-SB-06242011			JAX45-SB11-SB-06242011		
	LAB_ID	SE3674-8			SE3674-9			SE3674-10			SE3674-11		
	SAMP_DATE	6/24/2011			6/24/2011			6/24/2011			6/24/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.7			85.8			82.3			83.5		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
DIMETHYL PHTHALATE	82	U		88	U		87	U		91	U		
DI-N-BUTYL PHTHALATE	100	U		110	U		110	U		120	U		
DI-N-OCTYL PHTHALATE	220	U		240	U		240	U		250	U		
HEXACHLOROBENZENE	86	U		93	U		92	U		96	U		
HEXACHLOROBUTADIENE	87	U		94	U		93	U		97	U		
HEXACHLOROCYCLOPENTADIENE	86	U		93	U		92	U		96	U		
HEXACHLOROETHANE	100	U		110	U		110	U		110	U		
ISOPHORONE	78	U		85	U		84	U		88	U		
NITROBENZENE	95	U		100	U		100	U		110	U		
N-NITROSO-DI-N-PROPYLAMINE	87	U		94	U		93	U		97	U		
N-NITROSODIPHENYLAMINE	230	U		250	U		240	U		260	U		
PENTACHLOROPHENOL	250	U		270	U		260	U		280	U		
PHENOL	160	U		180	U		170	U		180	U		

PROJ_NO: 01511	NSAMPLE	JAX45-SB12-SB-06242011		JAX45-SB13-SB-06242011		JAX45-SB14-SB-06242011			
SDG: JAX04	LAB_ID	SE3674-12		SE3674-14		SE3674-15			
FRACTION: OS	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011			
MEDIA: SOIL	QC_TYPE	NM		NM		NM			
	UNITS	UG/KG		UG/KG		UG/KG			
	PCT_SOLIDS	93.0		79.6		86.0			
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DIMETHYL PHTHALATE	84	U		92	U		90	U	
DI-N-BUTYL PHTHALATE	110	U		120	U		120	U	
DI-N-OCTYL PHTHALATE	230	U		250	U		240	U	
HEXACHLOROBENZENE	88	U		97	U		95	U	
HEXACHLOROBUTADIENE	89	U		98	U		96	U	
HEXACHLOROCYCLOPENTADIENE	88	U		97	U		95	U	
HEXACHLOROETHANE	100	U		110	U		110	U	
ISOPHORONE	80	U		89	U		87	U	
NITROBENZENE	98	U		110	U		100	U	
N-NITROSO-DI-N-PROPYLAMINE	89	UJ	C	98	UJ	C	96	U	
N-NITROSODIPHENYLAMINE	230	U		260	U		250	U	
PENTACHLOROPHENOL	250	U		280	U		270	U	
PHENOL	170	U		180	U		180	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DUP01-06242011		JAX45-SB05-SB-06242011			JAX45-SB06-SB-06242011			JAX45-SB07-SB-06242011		
SDG: JAX04	LAB_ID	SE3674-13		SE3674-5			SE3674-6			SE3674-7		
FRACTION: PCB	SAMP_DATE	6/24/2011		6/23/2011			6/24/2011			6/24/2011		
MEDIA: SOIL	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/KG		UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	92.8		72.3			85.7			82.2		
	DUP_OF	JAX45-SB12-SB-06242011										
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016	6.4	U		8	UJ	C	6.7	UJ	C	7.2	UJ	C
AROCLOR-1221	8.4	U		10	U		8.8	U		9.5	U	
AROCLOR-1232	9.9	U		12	U		10	U		11	U	
AROCLOR-1242	6.2	U		7.7	U		6.5	U		7	U	
AROCLOR-1248	6.5	U		8.1	U		6.8	U		7.3	U	
AROCLOR-1254	5	U		6.2	U		5.2	U		5.6	U	
AROCLOR-1260	6.4	U		8	UJ	C	6.7	UJ	C	7.2	UJ	C

PROJ_NO: 01511	NSAMPLE	JAX45-SB08-SB-06242011		JAX45-SB09-SB-06242011		JAX45-SB10-SB-06242011		JAX45-SB11-SB-06242011				
SDG: JAX04	LAB_ID	SE3674-8		SE3674-9		SE3674-10		SE3674-11				
FRACTION: PCB	SAMP_DATE	6/24/2011		6/24/2011		6/24/2011		6/24/2011				
MEDIA: SOIL	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG				
	PCT_SOLIDS	94.7		85.8		82.3		83.5				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016	6.2	U		6.8	U		6.6	U		7	U	
AROCLOR-1221	8.2	U		9	U		8.6	U		9.2	U	
AROCLOR-1232	9.7	U		10	U		10	U		11	U	
AROCLOR-1242	6	U		6.6	U		6.4	U		6.8	U	
AROCLOR-1248	6.4	U		6.9	U		6.7	U		7.1	U	
AROCLOR-1254	4.9	U		5.4	U		5.1	U		5.5	U	
AROCLOR-1260	6.2	U		6.8	U		6.6	U		7	U	

PROJ_NO: 01511 SDG: JAX04 FRACTION: PCB MEDIA: SOIL	NSAMPLE	JAX45-SB12-SB-06242011		JAX45-SB13-SB-06242011			JAX45-SB14-SB-06242011		
	LAB_ID	SE3674-12		SE3674-14			SE3674-15		
	SAMP_DATE	6/24/2011		6/24/2011			6/24/2011		
	QC_TYPE	NM		NM			NM		
	UNITS	UG/KG		UG/KG			UG/KG		
	PCT_SOLIDS	93.0		79.6			86.0		
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016	5.9	U		7.2	U		6.4	U	
AROCLOR-1221	7.8	U		9.5	U		8.4	U	
AROCLOR-1232	9.2	U		11	U		10	U	
AROCLOR-1242	5.7	U		7	U		6.2	U	
AROCLOR-1248	6	U		7.3	U		6.5	U	
AROCLOR-1254	4.6	U		5.6	U		5	U	
AROCLOR-1260	5.9	U		7.2	U		6.4	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DUP01-06242011			JAX45-SB05-SB-06242011			JAX45-SB06-SB-06242011			JAX45-SB07-SB-06242011		
SDG: JAX04	LAB_ID	SE3674-13			SE3674-5			SE3674-6			SE3674-7		
FRACTION: PET	SAMP_DATE	6/24/2011			6/23/2011			6/24/2011			6/24/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	92.8			72.3			85.7			82.2		
	DUP_OF	JAX45-SB12-SB-06242011											
PARAMETER		RESULT	VQL	QLCD									
TPH (C08-C40)		190			250			210			140		

PROJ_NO: 01511	NSAMPLE	JAX45-SB08-SB-06242011	JAX45-SB09-SB-06242011			JAX45-SB10-SB-06242011			JAX45-SB11-SB-06242011			
SDG: JAX04	LAB_ID	SE3674-8	SE3674-9			SE3674-10			SE3674-11			
FRACTION: PET	SAMP_DATE	6/24/2011	6/24/2011			6/24/2011			6/24/2011			
MEDIA: SOIL	QC_TYPE	NM	NM			NM			NM			
	UNITS	MG/KG	MG/KG			MG/KG			MG/KG			
	PCT_SOLIDS	94.7	85.8			82.3			83.5			
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C08-C40)	100			28			29			72		

PROJ_NO: 01511	NSAMPLE	JAX45-SB12-SB-06242011	JAX45-SB13-SB-06242011	JAX45-SB14-SB-06242011
SDG: JAX04	LAB_ID	SE3674-12	SE3674-14	SE3674-15
FRACTION: PET	SAMP_DATE	6/24/2011	6/24/2011	6/24/2011
MEDIA: SOIL	QC_TYPE	NM	NM	NM
	UNITS	MG/KG	MG/KG	MG/KG
	PCT_SOLIDS	93.0	79.6	86.0
	DUP_OF			
PARAMETER	RESULT	VQL	QLCD	RESULT
TPH (C08-C40)	230		200	VQL
				30
				QLCD



Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: A. PATE **DATE:** AUGUST 8, 2011
FROM: JOSEPH KALINYAK **COPIES:** DV FILE
SUBJECT: ORGANIC DATA VALIDATION – VOC
NAS JACKSONVILLE, CTO 0112
SAMPLE DELIVERY GROUP (SDG) – JAX02
SAMPLES: 31 / Aqueous / VOC

JAX45-DPT-DUP01-12-06202011	JAX45-DPT-DUP02-40-06212011	JAX45-DPT12-40-06202011
JAX45-DPT12-12-06202011	JAX45-DPT12-20-06202011	JAX45-DPT13-20-06202011
JAX45-DPT12-60-06202011	JAX45-DPT13-12-06202011	JAX45-DPT14-12-06202011
JAX45-DPT13-40-06202011	JAX45-DPT13-60-06202011	JAX45-DPT14-60-06202011
JAX45-DPT14-20-06202011	JAX45-DPT14-40-06202011	JAX45-DPT15-40-06202111
JAX45-DPT15-12-06202111	JAX45-DPT15-20-06202111	JAX45-DPT16-20-06202111
JAX45-DPT15-60-06202111	JAX45-DPT16-12-06202111	JAX45-DPT17-12-06202111
JAX45-DPT16-40-06202111	JAX45-DPT16-60-06202111	JAX45-DPT17-60-06202111
JAX45-DPT17-20-06202111	JAX45-DPT17-40-06202111	JAX45-DPT18-40-06202111
JAX45-DPT18-12-06202111	JAX45-DPT18-20-06202111	
JAX45-DPT18-60-06202111	TB-01	

Overview

The sample set for NAS Jacksonville, CTO 0112, SDG JAX02 consisted of thirty-one (31) aqueous samples including one (1) aqueous QC trip blank sample. The samples were analyzed for volatile organic compounds (VOC) as indicated above. Two field duplicate sample pairs were included in the Sample Delivery Group (SDG); JAX45-DPT-DUP01-12-06202011 / JAX45-DPT14-12-06202011 and JAX45-DPT-DUP02-40-06212011 / JAX45-DPT18-40-06202111.

The samples were collected by Tetra Tech NUS on June 20 and 21, 2011 and analyzed by Katahdin Analytical Services Inc. The analysis was conducted in accordance with SW-846 Method 8260B analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

- * • Data Completeness
- * • Holding Times
- * • Initial and Continuing Calibration
- * • Laboratory Blank Analyses
- * • Field Duplicate Precision
- * • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

TO: A. PATE
SDG: JAX02

PAGE 2

VOC

The initial calibration relative standard deviation (RSD) was greater than the 15% quality control limit for acetone on instrument GCMS-D on 06/23/11.

Affecting samples: All SDG samples

Action: The positive and non-detected results for acetone for the aforementioned samples were qualified estimated, (J) and (UJ), respectively.

The continuing calibration verification (CCV) percent difference (%D) was greater than the 20% quality control limit for chloroethane and 2-butanone for instrument GCMS-D on 06/24/11 @ 09:07.

Affecting samples:

JAX45-DPT13-40-06202011DL	JAX45-DPT13-20-06202011DL	JAX45-DPT13-12-06202011
JAX45-DPT15-60-06202111	JAX45-DPT15-40-06202111	JAX45-DPT15-20-06202111
JAX45-DPT15-12-06202111	JAX45-DPT16-60-06202111	JAX45-DPT16-40-06202111
JAX45-DPT16-20-06202111	JAX45-DPT16-12-06202111	JAX45-DPT17-60-06202111
JAX45-DPT17-40-06202111	JAX45-DPT17-20-06202111	JAX45-DPT17-12-06202111

Action: The positive and non-detected results for 2-butanone for the aforementioned samples were qualified estimated, (J) and (UJ), respectively. The non-detected results for chloroethane for the aforementioned samples were qualified estimate, (UJ). Sample 2-butanone and chloroethane results for samples JAX45-DPT13-40-06202011DL and JAX45-DPT13-20-06202011DL were not qualified as they were reported from the undiluted samples.

The continuing calibration verification (CCV) percent difference (%D) was greater than the 20% quality control limit for chloroethane and 2-butanone for instrument GCMS-D on 06/24/11 @ 09:07.

Affecting samples:

TB-01	JAX45-DPT-DUP02-40-06212011	JAX45-DPT18-40-06202111
JAX45-DPT18-20-06202111	JAX45-DPT18-60-06202111	JAX45-DPT18-12-06202111

Action: The non-detected results for 2-butanone and chloroethane for the aforementioned samples were qualified estimated, (UJ).

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) were qualified as estimated, (J).

Additional Comments

The laboratory abbreviated sample designations throughout the laboratory report due to laboratory software limitations. Sample name prefixes were truncated for most of the samples.

It was noted that many sample dates were incorrect on the laboratory forms. From the laboratory narrative; "The date on the computer used to collect data from the "D" instrument was not the actual date for these samples and QC. The time on the computer was correct, but the date was off by several weeks. Consequently, the dates stamped on the quantitation reports, ROAs and QC summary reports for this job are incorrect. Forms that indicate the date of 01-AUG-11 should be 23-JUN-11, those that indicate 02-AUG-11 should be 24-JUN-11 and those that indicate 03-AUG-11 should be 25-JUN-11. This was no noticed until final review, and due to software security measures, the timestamps could not be altered."

VOC sample JAX45-DPT13-40-06202011 was analyzed undiluted, and also at a 10X dilution in order to quantify chloroform and carbon tetrachloride results which exceeded the highest calibration level in the undiluted sample analysis. Chloroform and carbon tetrachloride results were reported from the 10X dilution. All VOC other analytes were reported from the undiluted sample analysis.

TO: A. PATE
SDG: JAX02

PAGE 3

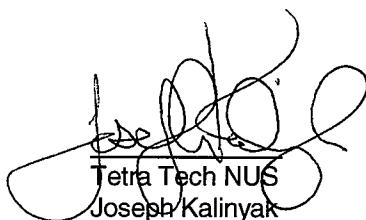
VOC sample JAX45-DPT13-20-06202011 was analyzed undiluted, and also at a 4X dilution in order to quantify the chloroform result which exceeded the highest calibration level in the undiluted sample analysis. The chloroform result was reported from the 4X dilution. All VOC other analytes were reported from the undiluted sample analysis. Non-detected results were reported to the minimum detection limit (MDL).

Executive Summary

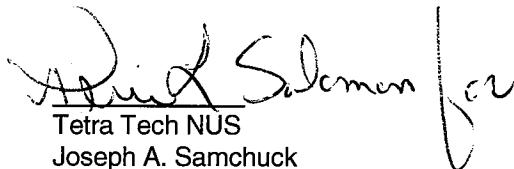
Laboratory Performance: The acetone VOC initial calibration RSD was greater than the quality control limit which resulted in the qualification of all acetone results. VOC CCV %D quality control limit non-compliances resulted in qualification of VOC analytes.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), USEPA Method SW-846 8260B, and Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009).



Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator



Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

A	= Lab Blank Contamination
B	= Field Blank Contamination
C	= Calibration Noncompliance (e.g. % RSDs, %D's, ICWS, CCWs, HRFs, etc.)
CDT	= GC/MS Tuning Noncompliance
D	= MS/MSD Recovery Noncompliance
E	= LC/MS/CS Recovery Noncompliance
F	= Lab Duplicate Imprecision
G	= Field Duplicate Imprecision
H	= Holding Time Exceedance
I	= ICP Serial Dilution Noncompliance
J	= GF/AA PDS - GF/AA MSA & r < 0.955 / ICP PDS Recovery Noncompliance
K	= ICP Interference - includes ICS % R Noncompliance
L	= Instrument Calibration Range Exceedance
M	= Sample Preservation Noncompliance
N	= Internal Standard Noncompliance
N01	= Internal Standard Recovery Noncompliance Dioxins
N02	= Recovery Standard Noncompliance Dioxins
N03	= Clean-up Standard Noncompliance Dioxins
O	= Poor Instrument Performance (e.g. base-line drifting)
P	= Uncertainty near detection limit (< 2 x IDL for inorganics and < CRLQ for organics)
Q	= Other problems (can encompass a number of issues; e.g. chromatography, interferences, etc.)
R	= Surrogates Recovery Noncompliance
S	= Pesticide/PCB Resolution
T	= % Breakdown Noncompliance for DDT and Endrin
U	= % Difference between column/detectors >25% for positive results determined via GC/HPLC
V	= Non-linear calibrations; correlation coefficient r < 0.995
W	= EMPC result
X	= Signal to noise response drop
Y	= Percent solids <30%
Z	= Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 01511	NSAMPLE	JAX45-DPT12-12-06202011		JAX45-DPT12-20-06202011		JAX45-DPT12-40-06202011		JAX45-DPT12-60-06202011				
SDG: JAX02	LAB_ID	SE3574-4		SE3574-3		SE3574-2		SE3574-1				
FRACTION: OV	SAMP_DATE	6/20/2011		6/20/2011		6/20/2011		6/20/2011				
MEDIA: WATER	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/L		UG/L		UG/L		UG/L				
	PCT_SOLIDS	0.0		0.0		0.0		0.0				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE	7.9			4.2			6.8			0.21	U	
1,1-DICHLOROETHENE	56			40			67			0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	47			37			65			0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U		0.24	U	
2-BUTANONE	1.3	U		1.3	U		1.3	U		1.3	U	
2-HEXANONE	1.7	U		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U		1.3	U	
ACETONE	2.2	UJ	C	2.2	UJ	C	2.2	UJ	C	2.2	UJ	C
BENZENE	0.34	J	P	0.76	J	P	0.36	J	P	0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.38	J	P	0.25	U		0.35	J	P	0.25	U	
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	U		0.55	U		0.55	U		0.55	U	
CHLOROFORM	0.32	U		0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.36	U		0.36	U		0.36	U	
CIS-1,2-DICHLOROETHENE	150			46			34			0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	U		0.31	U		0.31	U		0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511 SDG: JAX02 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT12-12-06202011		JAX45-DPT12-20-06202011		JAX45-DPT12-40-06202011		JAX45-DPT12-60-06202011		
	LAB_ID	SE3574-4		SE3574-3		SE3574-2		SE3574-1		
	SAMP_DATE	6/20/2011		6/20/2011		6/20/2011		6/20/2011		
	QC_TYPE	NM		NM		NM		NM		
	UNITS	UG/L		UG/L		UG/L		UG/L		
	PCT_SOLIDS	0.0		0.0		0.0		0.0		
	DUP_OF									
	PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE		1.1	U		1.1	U		1.1	U	
STYRENE		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE		0.4	U		0.4	U		0.4	U	
TOLUENE		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE		7.7			0.64	J	P	0.25	U	
TRANS-1,3-DICHLOROPROPENE		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE		4.7			21			46		0.28 U
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		5.5			1.1	J	P	0.54	J	P

PROJ_NO: 01511	NSAMPLE	JAX45-DPT13-12-06202011		JAX45-DPT13-20-06202011		JAX45-DPT13-20-06202011DL		JAX45-DPT13-40-06202011				
SDG: JAX02	LAB_ID	SE3574-8		SE3574-7		SE3574-7DL		SE3574-6				
FRACTION: OV	SAMP_DATE	6/20/2011		6/20/2011		6/20/2011		6/20/2011				
MEDIA: WATER	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/L		UG/L		UG/L		UG/L				
	PCT_SOLIDS	0.0		0.0		0.0		0.0				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	U					0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U					0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U					0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U					0.31	U	
1,1-DICHLOROETHANE	4.2			2						0.21	U	
1,1-DICHLOROETHENE	6.5			3.2						0.44	J	P
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U					0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U					0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U					0.22	U	
1,2-DICHLOROBENZENE	0.36	J	P	0.15	U					0.15	U	
1,2-DICHLOROETHANE	3.2			1.6						0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U					0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U					0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U					0.24	U	
2-BUTANONE	1.3	UJ	C	1.3	U					1.3	U	
2-HEXANONE	1.7	U		1.7	U					1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U					1.3	U	
ACETONE	2.2	UJ	C	3.3	J	CP				2.2	UJ	C
BENZENE	0.41	J	P	0.32	J	P				0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U					0.33	U	
BROMOFORM	0.23	U		0.23	U					0.23	U	
BROMOMETHANE	0.49	U		0.49	U					0.49	U	
CARBON DISULFIDE	0.56	J	P	0.46	J	P				2.8		
CARBON TETRACHLORIDE	0.95	J	P	54								
CHLOROBENZENE	0.22	U		0.22	U					0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U					0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	U					0.55	U	
CHLOROFORM	5.8						500					
CHLOROMETHANE	0.62	J	P	0.36	U					0.36	U	
CIS-1,2-DICHLOROETHENE	43			21						0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U					0.19	U	
CYCLOHEXANE	0.31	U		0.31	U					0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U					0.24	U	
ETHYLBENZENE	0.21	U		0.21	U					0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U					0.23	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT13-12-06202011	JAX45-DPT13-20-06202011		JAX45-DPT13-20-06202011DL		JAX45-DPT13-40-06202011					
SDG: JAX02	LAB_ID	SE3574-8	SE3574-7		SE3574-7DL		SE3574-6					
FRACTION: OV	SAMP_DATE	6/20/2011	6/20/2011		6/20/2011		6/20/2011					
MEDIA: WATER	QC_TYPE	NM	NM		NM		NM					
	UNITS	UG/L	UG/L		UG/L		UG/L					
	PCT_SOLIDS	0.0	0.0		0.0		0.0					
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U					0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U					0.4	J	P
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U					0.36	U	
METHYLENE CHLORIDE	1.1	U		1.7	J	P				6.1		
STYRENE	0.23	U		0.23	U					0.23	U	
TETRACHLOROETHENE	0.4	U		5.4						13		
TOLUENE	0.27	U		1.3						4.6		
TOTAL XYLEMES	0.25	U		0.25	U					6.2		
TRANS-1,2-DICHLOROETHENE	4.2			1.4						0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U					0.2	U	
TRICHLOROETHENE	24			11						0.4	J	P
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U					0.24	U	
VINYL CHLORIDE	2.9			1.2	J	P				0.25	U	

PROJ_NO: 01511 SDG: JAX02 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT13-40-06202011DL		JAX45-DPT13-60-06202011			JAX45-DPT14-12-06202011			JAX45-DPT14-20-06202011		
	LAB_ID	SE3574-6DL		SE3574-5			SE3574-12			SE3574-11		
	SAMP_DATE	6/20/2011		6/20/2011			6/20/2011			6/20/2011		
	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/L		UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0		0.0			0.0			0.0		
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE				0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE				0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE				0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE				0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE				0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE				0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE				0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE				0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE				0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE				0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE				0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE				0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE				0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE				0.24	U		0.24	U		0.24	U	
2-BUTANONE				1.3	U		1.3	U		1.3	U	
2-HEXANONE				1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE				1.3	U		1.3	U		1.3	U	
ACETONE				2.2	UJ	C	2.2	UJ	C	2.8	J	CP
BENZENE				0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE				0.33	U		0.33	U		0.33	U	
BROMOFORM				0.23	U		0.23	U		0.23	U	
BROMOMETHANE				0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE				0.42	J	P	0.25	U		0.41	J	P
CARBON TETRACHLORIDE	860			0.22	U		0.22	U		0.22	U	
CHLOROBENZENE				0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE				0.3	U		0.3	U		0.3	U	
CHLOROETHANE				0.55	U		0.55	U		0.55	U	
CHLOROFORM	900			2.8			0.32	U		0.32	U	
CHLOROMETHANE				0.36	U		0.36	U		0.44	J	P
CIS-1,2-DICHLOROETHENE				0.36	J	P	0.53	J	P	0.21	U	
CIS-1,3-DICHLOROPROPENE				0.19	U		0.19	U		0.19	U	
CYCLOHEXANE				0.31	U		0.31	U		0.31	U	
DICHLORODIFLUOROMETHANE				0.24	U		0.24	U		0.24	U	
ETHYLBENZENE				0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE				0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511 SDG: JAX02 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT13-40-06202011DL			JAX45-DPT13-60-06202011			JAX45-DPT14-12-06202011			JAX45-DPT14-20-06202011		
	LAB_ID	SE3574-6DL			SE3574-5			SE3574-12			SE3574-11		
	SAMP_DATE	6/20/2011			6/20/2011			6/20/2011			6/20/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
METHYL ACETATE				0.53	U		0.53	U		0.53	U		
METHYL CYCLOHEXANE				0.3	U		0.3	U		0.3	U		
METHYL TERT-BUTYL ETHER				0.36	U		0.36	U		0.36	U		
METHYLENE CHLORIDE				1.1	U		1.1	U		1.1	U		
STYRENE				0.23	U		0.23	U		0.23	U		
TETRACHLOROETHENE				0.4	U		0.4	U		0.4	U		
TOLUENE				0.27	U		0.27	U		0.27	U		
TOTAL XYLEMES				0.25	U		0.25	U		0.25	U		
TRANS-1,2-DICHLOROETHENE				0.25	U		0.25	U		0.25	U		
TRANS-1,3-DICHLOROPROPENE				0.2	U		0.2	U		0.2	U		
TRICHLOROETHENE				0.28	U		0.28	U		0.28	U		
TRICHLOROFLUOROMETHANE				0.24	U		0.24	U		0.24	U		
VINYL CHLORIDE				0.25	U		0.25	U		0.25	U		

PROJ_NO: 01511 SDG: JAX02 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT14-40-06202011		JAX45-DPT14-60-06202011		JAX45-DPT15-12-06202111			JAX45-DPT15-20-06202111					
	LAB_ID	SE3574-10		SE3574-9		SE3574-17			SE3574-16					
	SAMP_DATE	6/20/2011		6/20/2011		6/21/2011			6/21/2011					
	QC_TYPE	NM		NM		NM			NM					
	UNITS	UG/L		UG/L		UG/L			UG/L					
	PCT_SOLIDS	0.0		0.0		0.0			0.0					
	DUP_OF													
	PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE		0.2	U			0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE		0.38	U			0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE		0.33	U			0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U			0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE		0.21	U			0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE		0.35	U			0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE		0.37	U			0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.5	U			0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE		0.22	U			0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE		0.15	U			0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE		0.2	U			0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE		0.25	U			0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE		0.26	U			0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE		0.24	U			0.24	U		0.24	U		0.24	U	
2-BUTANONE		1.3	U			1.3	U		1.3	UJ	C	1.3	UJ	C
2-HEXANONE		1.7	U			1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE		1.3	U			1.3	U		1.3	U		1.3	U	
ACETONE		2.2	UJ	C		2.2	UJ	C	2.2	UJ	C	2.2	UJ	C
BENZENE		0.26	U			0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE		0.33	U			0.33	U		0.33	U		0.33	U	
BROMOFORM		0.23	U			0.23	U		0.23	U		0.23	U	
BROMOMETHANE		0.49	U			0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE		0.25	U			0.25	U		0.25	U		0.65	J	P
CARBON TETRACHLORIDE		0.22	U			0.31	J	P	0.22	U		0.22	U	
CHLOROBENZENE		0.22	U			0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE		0.3	U			0.3	U		0.3	U		0.3	U	
CHLOROETHANE		0.55	U			0.55	U		0.55	UJ	C	0.55	UJ	C
CHLOROFORM		0.32	U			0.32	U		0.32	U		0.32	U	
CHLOROMETHANE		1.1	J	P		1.1	J	P	0.36	U		0.46	J	P
CIS-1,2-DICHLOROETHENE		0.21	U			0.21	U		0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE		0.19	U			0.19	U		0.19	U		0.19	U	
CYCLOHEXANE		0.31	U			0.31	U		0.31	U		0.31	U	
DICHLORODIFLUOROMETHANE		0.24	U			0.24	U		0.24	U		0.24	U	
ETHYLBENZENE		0.21	U			0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE		0.23	U			0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT14-40-06202011	JAX45-DPT14-60-06202011	JAX45-DPT15-12-06202111	JAX45-DPT15-20-06202111							
SDG: JAX02	LAB_ID	SE3574-10	SE3574-9	SE3574-17	SE3574-16							
FRACTION: OV	SAMP_DATE	6/20/2011	6/20/2011	6/21/2011	6/21/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.28	U		0.28	U		0.28	U		0.28	U	
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT15-40-06202111	JAX45-DPT15-60-06202111	JAX45-DPT16-12-06202111	JAX45-DPT16-20-06202111							
SDG: JAX02	LAB_ID	SE3574-15	SE3574-14	SE3574-21	SE3574-20							
FRACTION: OV	SAMP_DATE	6/21/2011	6/21/2011	6/21/2011	6/21/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.35	U		0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U		0.24	U	
2-BUTANONE	6.6	J	C	1.3	UJ	C	1.3	UJ	C	1.3	UJ	C
2-HEXANONE	1.7	U		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U		1.3	U	
ACETONE	3.7	J	CP	2.2	UJ	C	2.7	J	CP	2.2	UJ	C
BENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.25	U		0.25	U		0.25	U		0.54	J	P
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C
CHLOROFORM	0.32	U		0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.43	J	P	0.4	J	P	0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U		0.21	U		0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	U		0.31	U		0.31	U		0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT15-40-06202111	JAX45-DPT15-60-06202111	JAX45-DPT16-12-06202111	JAX45-DPT16-20-06202111							
SDG: JAX02	LAB_ID	SE3574-15	SE3574-14	SE3574-21	SE3574-20							
FRACTION: OV	SAMP_DATE	6/21/2011	6/21/2011	6/21/2011	6/21/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.28	U		0.28	U		0.28	U		0.33	J	P
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT16-40-06202111	JAX45-DPT16-60-06202111	JAX45-DPT17-12-06202111	JAX45-DPT17-20-06202111							
SDG: JAX02	LAB_ID	SE3574-19	SE3574-18	SE3574-25	SE3574-24							
FRACTION: OV	SAMP_DATE	6/21/2011	6/21/2011	6/21/2011	6/21/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.35	U		0.35	U		0.35	U		3		
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U		0.24	U	
2-BUTANONE	6.5	J	C	1.3	UJ	C	1.3	UJ	C	1.3	UJ	C
2-HEXANONE	1.7	U		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U		1.3	U	
ACETONE	3.3	J	CP	2.2	UJ	C	2.2	UJ	C	2.2	UJ	C
BENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.43	J	P	0.35	J	P	0.78	J	P	0.44	J	P
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C
CHLOROFORM	0.32	U		0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.36	U		0.36	U		0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U		0.21	U		0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	U		0.31	U		0.31	U		0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT16-40-06202111	JAX45-DPT16-60-06202111	JAX45-DPT17-12-06202111	JAX45-DPT17-20-06202111							
SDG: JAX02	LAB_ID	SE3574-19	SE3574-18	SE3574-25	SE3574-24							
FRACTION: OV	SAMP_DATE	6/21/2011	6/21/2011	6/21/2011	6/21/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.28	U		0.28	U		0.71	J	P	8		
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511 SDG: JAX02 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT17-40-06202111		JAX45-DPT17-60-06202111		JAX45-DPT18-12-06202111		JAX45-DPT18-20-06202111		
	LAB_ID	SE3574-23		SE3574-22		SE3574-30		SE3574-29		
	SAMP_DATE	6/21/2011		6/21/2011		6/21/2011		6/21/2011		
	QC_TYPE	NM		NM		NM		NM		
	UNITS	UG/L		UG/L		UG/L		UG/L		
	PCT_SOLIDS	0.0		0.0		0.0		0.0		
	DUP_OF									
	PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE		0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE		0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE		0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE		0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE		0.24	U		0.24	U		0.24	U	
2-BUTANONE		1.3	UJ	C	1.3	UJ	C	1.3	UJ	C
2-HEXANONE		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE		1.3	U		1.3	U		1.3	U	
ACETONE		2.8	J	CP	2.2	UJ	C	4.2	J	CP
BENZENE		0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE		0.33	U		0.33	U		0.33	U	
BROMOFORM		0.23	U		0.23	U		0.23	U	
BROMOMETHANE		0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE		0.25	U		0.42	J	P	1.9		0.32 J P
CARBON TETRACHLORIDE		0.22	U		0.22	U		0.22	U	
CHLOROBENZENE		0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE		0.3	U		0.3	U		0.3	U	
CHLOROETHANE		0.55	UJ	C	0.55	UJ	C	0.55	UJ	C
CHLOROFORM		0.32	U		0.32	U		0.32	U	
CHLOROMETHANE		1.1	J	P	0.6	J	P	0.36	U	0.48 J P
CIS-1,2-DICHLOROETHENE		0.21	U		0.21	U		0.21	U	0.24 J P
CIS-1,3-DICHLOROPROPENE		0.19	U		0.19	U		0.19	U	0.19 U
CYCLOHEXANE		0.31	U		0.31	U		0.31	U	0.31 U
DICHLORODIFLUOROMETHANE		0.24	U		0.24	U		0.24	U	
ETHYLBENZENE		0.21	U		0.21	U		0.21	U	0.21 U
ISOPROPYLBENZENE		0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT17-40-06202111	JAX45-DPT17-60-06202111	JAX45-DPT18-12-06202111	JAX45-DPT18-20-06202111							
SDG: JAX02	LAB_ID	SE3574-23	SE3574-22	SE3574-30	SE3574-29							
FRACTION: OV	SAMP_DATE	6/21/2011	6/21/2011	6/21/2011	6/21/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.28	U		0.28	U		0.28	U		1.7		
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT18-40-06202111		JAX45-DPT18-60-06202111		JAX45-DPT-DUP01-12-06202011		JAX45-DPT-DUP02-40-06212011	
SDG: JAX02	LAB_ID	SE3574-28		SE3574-27		SE3574-13		SE3574-26	
FRACTION: OV	SAMP_DATE	6/21/2011		6/21/2011		6/20/2011		6/21/2011	
MEDIA: WATER	QC_TYPE	NM		NM		NM		NM	
	UNITS	UG/L		UG/L		UG/L		UG/L	
	PCT_SOLIDS	0.0		0.0		0.0		0.0	
	DUP_OF					JAX45-DPT14-12-06202011		JAX45-DPT18-40-06202111	
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U	
2-BUTANONE	1.3	UJ	C	1.3	UJ	C	1.3	U	
2-HEXANONE	1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U	
ACETONE	3	J	CP	2.2	UJ	C	2.2	UJ	C
BENZENE	0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.34	J	P	0.25	U		0.31	J	P
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C	0.55	U	
CHLOROFORM	0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.42	J	P	0.52	J	P
CIS-1,2-DICHLOROETHENE	0.21	U		0.21	U		0.55	J	P
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	U		0.31	U		0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT18-40-06202111	JAX45-DPT18-60-06202111	JAX45-DPT-DUP01-12-06202011	JAX45-DPT-DUP02-40-06212011							
SDG: JAX02	LAB_ID	SE3574-28	SE3574-27	SE3574-13	SE3574-26							
FRACTION: OV	SAMP_DATE	6/21/2011	6/21/2011	6/20/2011	6/21/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF			JAX45-DPT14-12-06202011	JAX45-DPT18-40-06202111							
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.42	J	P	0.28	U		0.28	U		0.87	J	P
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511	NSAMPLE	TB-01	
SDG: JAX02	LAB_ID	SE3574-31	
FRACTION: OV	SAMP_DATE	6/21/2011	
MEDIA: WATER	QC_TYPE	NM	
	UNITS	UG/L	
	PCT_SOLIDS	0.0	
	DUP_OF		
PARAMETER	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U	
1,1-DICHLOROETHANE	0.21	U	
1,1-DICHLOROETHENE	0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U	
1,2-DIBROMOETHANE	0.22	U	
1,2-DICHLOROBENZENE	0.15	U	
1,2-DICHLOROETHANE	0.2	U	
1,2-DICHLOROPROPANE	0.25	U	
1,3-DICHLOROBENZENE	0.26	U	
1,4-DICHLOROBENZENE	0.24	U	
2-BUTANONE	1.3	UJ	C
2-HEXANONE	1.7	U	
4-METHYL-2-PENTANONE	1.3	U	
ACETONE	2.2	UJ	C
BENZENE	0.26	U	
BROMODICHLOROMETHANE	0.33	U	
BROMOFORM	0.23	U	
BROMOMETHANE	0.49	U	
CARBON DISULFIDE	0.25	U	
CARBON TETRACHLORIDE	0.22	U	
CHLOROBENZENE	0.22	U	
CHLORODIBROMOMETHANE	0.3	U	
CHLOROETHANE	0.55	UJ	C
CHLOROFORM	0.32	U	
CHLOROMETHANE	0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U	
CYCLOHEXANE	0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U	
ETHYLBENZENE	0.21	U	
ISOPROPYLBENZENE	0.23	U	

PROJ_NO: 01511	NSAMPLE	TB-01	
SDG: JAX02	LAB_ID	SE3574-31	
FRACTION: OV	SAMP_DATE	6/21/2011	
MEDIA: WATER	QC_TYPE	NM	
	UNIT_S	UG/L	
	PCT_SOLIDS	0.0	
	DUP_OF		
PARAMETER	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U	
METHYL CYCLOHEXANE	0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U	
METHYLENE CHLORIDE	1.1	U	
STYRENE	0.23	U	
TETRACHLOROETHENE	0.4	U	
TOLUENE	0.27	U	
TOTAL XYLEMES	0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	0.28	U	
TRICHLOROFUROMETHANE	0.24	U	
VINYL CHLORIDE	0.25	U	



Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: A. PATE **DATE:** AUGUST 15, 2011
FROM: MICHELLE ALLEN **COPIES:** DV FILE
SUBJECT: ORGANIC DATA VALIDATION – VOC
CTO 0112, NAS JACKSONVILLE
SDG JAX03
SAMPLES: 16/Aqueous /VOC

AX45-DPT-RINSATE-06222011	JAX45-DPT-DUP03-06222011
JAX45-DPT-DUP04-40-06222011	JAX45-DPT19-12-06222011
JAX45-DPT19-20-06222011	JAX45-DPT19-40-06222011
JAX45-DPT19-60-06222011	JAX45-DPT20-12-06222011
JAX45-DPT20-20-06222011	JAX45-DPT20-40-06222011
JAX45-DPT20-60-06222011	JAX45-DPT21-12-06222011
JAX45-DPT21-20-06222011	JAX45-DPT21-40-06222011
JAX45-DPT21-60-06222011	TB-02

OVERVIEW

The sample set for NAS Jacksonville SDG JAX03 consisted of fourteen (14) aqueous environmental samples, one (1) rinsate blank, and one (1) trip blank. The samples were analyzed for volatile organic compounds (VOC). Two field duplicate pairs were associated with this Sample Delivery Group (SDG); JAX45-DPT-DUP03-06222011/JAX45-DPT19-40-06222011 and JAX45-DUP04-40-06222011/JAX45-DPT20-40-0622201.

The samples were collected by TetraTech NUS on June 22, 2011 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 Method 8260B analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

- Data Completeness
- * • Holding Times/Sample Preservation
- * • Initial/Continuing Calibrations
- * • Laboratory Method and Field Blank Results
- * • Field Duplicate Results
- * • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

The text of this report is formatted to address only gross non-compliances resulting in the rejection of data and the elimination of false positives.

VOC

The continuing calibration performed on 06/24/11 on instrument GCMS-F @ 09:41 had a Percent Drift (%Drift) for chloroethane greater than the 20% quality control limit. In addition the Percent Differences (%Ds) for carbon

disulfide and cyclohexane exceeded the 20% quality control criteria. Samples AX45-DPT-RINSATE-06222011, JAX45-DPT-DUP03-06222011, JAX45-DPT19-12-06222011, JAX45-DPT19-40-06222011, JAX45-DPT19-60-06222011, JAX45-DPT20-20-06222011, JAX45-DPT20-60-06222011, and TB-02 were affected. The positive and non-detected results reported for these compounds in the affected samples were qualified as estimated, (J) and (UJ), respectively.

The %D for carbon disulfide from the continuing calibration performed on 06/25/11 on instrument GCMS-F @ 10:23 exceeded the 20% quality control limit. The positive and non-detected results reported for carbon disulfide in the affected samples, JAX45-DPT-DUP04-40-06222011, JAX45-DPT20-40-06222011, and JAX45-DPT21-40-06222011, were qualified as estimated, (J) and (UJ), respectively.

The continuing calibration performed on 06/27/11 on instrument GCMS-F @ 07:45 had a %Drift for chloroethane greater than the 20% quality control limit. In addition the %Ds for carbon disulfide, 1,1,2-trichlorotrifluoroethane (Freon 113), 1,1,1-trichloroethane, cyclohexane, and methylcyclohexane. Samples JAX45-DPT19-20-06222011, JAX45-DPT20-12-06222011, JAX45-DPT21-12-06222011, JAX45-DPT21-20-06222011, and JAX45-DPT21-60-06222011 were affected.

The following contaminant was detected in the trip blank, TB-02, at the following maximum concentration:

<u>Analyte</u>	<u>Maximum Concentration (µg/L)</u>	<u>Action Level (µg/L)</u>
Acetone ⁽¹⁾	2.8	28

⁽¹⁾ Maximum concentration present in the trip blank, TB-02, affecting all samples, with the exception of the rinsate blank, AX45-DPT-RINSATE-06222011.

An action level of 10X the maximum contaminant level has been used for the common laboratory contaminant acetone to evaluate sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Affected sample results below the action level were qualified as non-detected, (U), due to trip blank contamination.

NOTES

The continuing calibration Form VII from instrument GCMS-F on 06/27/11 @ 07:45 had the incorrect Relative Response Factors (RRFs). The laboratory was contacted and the form was corrected. No validation qualification was necessary.

Acetone and 2-butanone were detected in the rinsate blank, AX45-DPT-RINSATE-06222011.

Carbon Disulfide was detected below the Limit of Quantitation (LOQ) in the environmental sample, JAX45-DPT20-40-06222011, but not in the field duplicate sample, JAX45-DPT-DUP04-40-06222011. No action was necessary because the difference between the positive and non-detected results was less than 2X the LOQ.

The trip blank sample, TB-02, associated with the samples in this SDG was labeled TB-01 on the Chain of Custody (COC) form. However, a trip blank was previously identified as TB-01 in SDG JAX02, therefore, the trip blank associated with these samples was renamed the unique identification, TB-02.

Positive results reported below the LOQ but above the Method Detection Limit (MDL) were qualified as estimated, (J). Non-detected results were reported to the MDL.

EXECUTIVE SUMMARY

TO: A. PATE
SDG: JAX03

PAGE 3

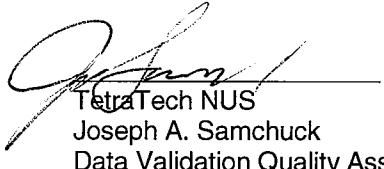
Laboratory Performance Issues: A continuing calibration Form VII was incorrect. Some %Drift and/or %Ds exceeded the quality control limit.

Other Factors Affecting Data Quality: Contaminants were detected in the trip and rinsate blanks. Positive results reported below the LOQ but above the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), SW-846 Method 8260B analytical and reporting protocols, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009). The text of this report has been formulated to address only those problem areas affecting data quality.



Tetra Tech NUS
Michelle L. Allen
Chemist/Data Validator



TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

APPENDIX A
QUALIFIED LABORATORY RESULTS

Data Validation Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = GF/AA PDS - GF/AA MSA's $r < 0.995$ / ICP PDS Recovery Noncompliance
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (e.g. base-line drifting)
- P = Uncertainty near detection limit ($< 2 \times \text{IDL}$ for inorganics and $< \text{CRQL}$ for organics)
- Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = % Difference between columns/detectors $> 25\%$ for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $< 30\%$
- Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 01511	NSAMPLE	AX45-DPT-RINSATE-06222011	JAX45-DPT19-12-06222011	JAX45-DPT19-20-06222011	JAX45-DPT19-40-06222011							
SDG: JAX03	LAB_ID	SE3610-15	SE3610-4	SE3610-3	SE3610-2							
FRACTION: OV	SAMP_DATE	6/22/2011	6/22/2011	6/22/2011	6/22/2011							
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM							
	UNITS	UG/L	UG/L	UG/L	UG/L							
	PCT_SOLIDS	0.0	0.0	0.0	0.0							
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	U		0.2	UJ	C	0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U		0.31	UJ	C	0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.35	U		0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U		0.24	U	
2-BUTANONE	20			1.3	U		1.3	U		1.3	U	
2-HEXANONE	1.7	U		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U		1.3	U	
ACETONE	42			3.3	U	B	3.1	U	B	3.2	U	B
BENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.25	UJ	C	0.33	J	CP	0.6	J	CP	0.25	UJ	C
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C
CHLOROFORM	0.32	U		0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.36	U		0.77	J	P	0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U		0.21	U		0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	UJ	C	0.31	UJ	C	0.31	UJ	C	0.31	UJ	C
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511 SDG: JAX03 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT19-60-06222011		JAX45-DPT20-12-06222011		JAX45-DPT20-20-06222011		JAX45-DPT20-40-06222011	
	LAB_ID	SE3610-1		SE3610-9		SE3610-8		SE3610-7	
	SAMP_DATE	6/22/2011		6/22/2011		6/22/2011		6/22/2011	
	QC_TYPE	NM		NM		NM		NM	
	UNITS	UG/L		UG/L		UG/L		UG/L	
	PCT_SOLIDS	0.0		0.0		0.0		0.0	
	DUP_OF								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	UJ	C	0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	UJ	C	0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U	
2-BUTANONE	1.3	U		1.3	U		1.3	U	
2-HEXANONE	1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U	
ACETONE	3.1	U	B	4.1	U	B	5.7	U	B
BENZENE	0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.25	UJ	C	0.25	UJ	C	0.4	J	CP
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C	0.55	U	
CHLOROFORM	0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.65	J	P	0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U		0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	UJ	C	0.31	UJ	C	0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT20-60-06222011		JAX45-DPT21-12-06222011		JAX45-DPT21-20-06222011		JAX45-DPT21-40-06222011				
SDG: JAX03	LAB_ID	SE3610-6		SE3610-14		SE3610-13		SE3610-12				
FRACTION: OV	SAMP_DATE	6/22/2011		6/22/2011		6/22/2011		6/22/2011				
MEDIA: WATER	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/L		UG/L		UG/L		UG/L				
	PCT_SOLIDS	0.0		0.0		0.0		0.0				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	U		0.2	UJ	C	0.2	UJ	C	0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	UJ	C	0.31	UJ	C	0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.35	U		0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U		0.24	U	
2-BUTANONE	1.3	U		1.3	U		1.3	U		1.3	U	
2-HEXANONE	1.7	U		1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U		1.3	U	
ACETONE	2.2	U	B	3.5	U	B	2.6	U	B	4.8	U	B
BENZENE	0.26	U		0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C	0.55	U	
CHLOROFORM	0.32	U		0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.36	U		0.36	U		0.36	U		0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U		0.96	J	P	0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	UJ	C	0.31	UJ	C	0.31	UJ	C	0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511 SDG: JAX03 FRACTION: OV MEDIA: WATER	NSAMPLE	JAX45-DPT21-60-06222011		JAX45-DPT-DUP03-06222011		JAX45-DPT-DUP04-40-06222011		TB-02	
	LAB_ID	SE3610-11		SE3610-5		SE3610-10		SE3610-16	
	SAMP_DATE	6/22/2011		6/22/2011		6/22/2011		6/22/2011	
	QC_TYPE	NM		NM		NM		NM	
	UNITS	UG/L		UG/L		UG/L		UG/L	
	PCT_SOLIDS	0.0		0.0		0.0		0.0	
	DUP_OF			JAX45-DPT19-40-06222011		JAX45-DPT20-40-06222011			
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.2	UJ	C	0.2	U		0.2	U	
1,1,2,2-TETRACHLOROETHANE	0.38	U		0.38	U		0.38	U	
1,1,2-TRICHLOROETHANE	0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	UJ	C	0.31	U		0.31	U	
1,1-DICHLOROETHANE	0.21	U		0.21	U		0.21	U	
1,1-DICHLOROETHENE	0.35	U		0.35	U		0.35	U	
1,2,4-TRICHLOROBENZENE	0.37	U		0.37	U		0.37	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U	
1,2-DIBROMOETHANE	0.22	U		0.22	U		0.22	U	
1,2-DICHLOROBENZENE	0.15	U		0.15	U		0.15	U	
1,2-DICHLOROETHANE	0.2	U		0.2	U		0.2	U	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U	
1,3-DICHLOROBENZENE	0.26	U		0.26	U		0.26	U	
1,4-DICHLOROBENZENE	0.24	U		0.24	U		0.24	U	
2-BUTANONE	1.3	U		1.3	U		1.3	U	
2-HEXANONE	1.7	U		1.7	U		1.7	U	
4-METHYL-2-PENTANONE	1.3	U		1.3	U		1.3	U	
ACETONE	2.9	U	B	3.1	J	B	4.4	U	B
BENZENE	0.26	U		0.26	U		0.26	U	
BROMODICHLOROMETHANE	0.33	U		0.33	U		0.33	U	
BROMOFORM	0.23	U		0.23	U		0.23	U	
BROMOMETHANE	0.49	U		0.49	U		0.49	U	
CARBON DISULFIDE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C
CARBON TETRACHLORIDE	0.22	U		0.22	U		0.22	U	
CHLOROBENZENE	0.22	U		0.22	U		0.22	U	
CHLORODIBROMOMETHANE	0.3	U		0.3	U		0.3	U	
CHLOROETHANE	0.55	UJ	C	0.55	UJ	C	0.55	UJ	C
CHLOROFORM	0.32	U		0.32	U		0.32	U	
CHLOROMETHANE	0.5	J	P	0.36	U		0.36	U	
CIS-1,2-DICHLOROETHENE	0.21	U		0.21	U		0.21	U	
CIS-1,3-DICHLOROPROPENE	0.19	U		0.19	U		0.19	U	
CYCLOHEXANE	0.31	UJ	C	0.31	UJ	C	0.31	U	
DICHLORODIFLUOROMETHANE	0.24	U		0.24	U		0.24	U	
ETHYLBENZENE	0.21	U		0.21	U		0.21	U	
ISOPROPYLBENZENE	0.23	U		0.23	U		0.23	U	

PROJ_NO: 01511 SDG: JAX03 FRACTION: OV MEDIA: WATER	NSAMPLE	AX45-DPT-RINSATE-06222011		JAX45-DPT19-12-06222011			JAX45-DPT19-20-06222011			JAX45-DPT19-40-06222011		
	LAB_ID	SE3610-15		SE3610-4			SE3610-3			SE3610-2		
	SAMP_DATE	6/22/2011		6/22/2011			6/22/2011			6/22/2011		
	QC_TYPE	NM		NM			NM			NM		
	UNITS	UG/L		UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0		0.0			0.0			0.0		
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	UJ	C	0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.28	U		0.28	U		0.28	U		0.28	U	
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT19-60-06222011		JAX45-DPT20-12-06222011		JAX45-DPT20-20-06222011		JAX45-DPT20-40-06222011				
SDG: JAX03	LAB_ID	SE3610-1		SE3610-9		SE3610-8		SE3610-7				
FRACTION: OV	SAMP_DATE	6/22/2011		6/22/2011		6/22/2011		6/22/2011				
MEDIA: WATER	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/L		UG/L		UG/L		UG/L				
	PCT_SOLIDS	0.0		0.0		0.0		0.0				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U	C	0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.28	U		0.28	U		0.28	U		0.28	U	
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT20-60-06222011		JAX45-DPT21-12-06222011		JAX45-DPT21-20-06222011		JAX45-DPT21-40-06222011				
SDG: JAX03	LAB_ID	SE3610-6		SE3610-14		SE3610-13		SE3610-12				
FRACTION: OV	SAMP_DATE	6/22/2011		6/22/2011		6/22/2011		6/22/2011				
MEDIA: WATER	QC_TYPE	NM		NM		NM		NM				
	UNITS	UG/L		UG/L		UG/L		UG/L				
	PCT_SOLIDS	0.0		0.0		0.0		0.0				
	DUP_OF											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE	0.53	U		0.53	U		0.53	U		0.53	U	
METHYL CYCLOHEXANE	0.3	U		0.3	UJ	C	0.3	UJ	C	0.3	U	
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U		0.36	U		0.36	U	
METHYLENE CHLORIDE	1.1	U		1.1	U		1.1	U		1.1	U	
STYRENE	0.23	U		0.23	U		0.23	U		0.23	U	
TETRACHLOROETHENE	0.4	U		0.4	U		0.4	U		0.4	U	
TOLUENE	0.27	U		0.27	U		0.27	U		0.27	U	
TOTAL XYLEMES	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE	0.28	U		0.28	U		0.28	U		1.7		
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U	

PROJ_NO: 01511	NSAMPLE	JAX45-DPT21-60-06222011	JAX45-DPT-DUP03-06222011	JAX45-DPT-DUP04-40-06222011	TB-02
SDG: JAX03	LAB_ID	SE3610-11	SE3610-5	SE3610-10	SE3610-16
FRACTION: OV	SAMP_DATE	6/22/2011	6/22/2011	6/22/2011	6/22/2011
MEDIA: WATER	QC_TYPE	NM	NM	NM	NM
	UNITS	UG/L	UG/L	UG/L	UG/L
	PCT_SOLIDS	0.0	0.0	0.0	0.0
	DUP_OF	JAX45-DPT19-40-06222011	JAX45-DPT20-40-06222011	JAX45-DPT20-40-06222011	
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL
METHYL ACETATE	0.53	U		0.53	U
METHYL CYCLOHEXANE	0.3	UJ	C	0.3	U
METHYL TERT-BUTYL ETHER	0.36	U		0.36	U
METHYLENE CHLORIDE	1.1	U		1.1	U
STYRENE	0.23	U		0.23	U
TETRACHLOROETHENE	0.4	U		0.4	U
TOLUENE	0.27	U		0.27	U
TOTAL XYLEMES	0.25	U		0.25	U
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U
TRANS-1,3-DICHLOROPROPENE	0.2	U		0.2	U
TRICHLOROETHENE	0.28	U		0.28	U
TRICHLOROFUROMETHANE	0.24	U		0.24	U
VINYL CHLORIDE	0.25	U		0.25	U

APPENDIX B

COST ESTIMATE

NAVAL AIR STATION JACKSONVILLE

JACKSONVILLE, FLORIDA

PSC 45

ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
1 PROJECT PLANNING											
1.1 Prepare Monitoring Plan	20 hr		\$40	\$	-	\$	800	\$	-	\$	800
2 INSTITUTIONAL CONTROLS											
2.1 Prepare LUCs	150 hr		\$40	\$	-	\$	6,000	\$	-	\$	6,000
Subtotal				\$	-	\$	6,800	\$	-	\$	6,800
Overhead on Labor Cost @100%							\$	6,800		\$	6,800
G & A on Labor Cost @ 10%							\$	680		\$	680
G & A on Material Cost at 10%							\$	-		\$	-
G & A on C=Subcontractor Cost @ 10%				\$	-					\$	-
Total Direct Costs				\$	-	\$	14,280	\$	-	\$	14,280
Profit on Total Direct Cost @ 10%										\$	1,428
Subtotal										\$	15,708
Health and Safety Monitoring @ 0%							\$	-		\$	-
Contingency on Subtotal Cost@ 0%							\$	-		\$	-
Engineering on Subtotal Cost @ 0%							\$	-		\$	-
TOTAL COST										\$	15,708

NAVAL AIR STATION JACKSONVILLE**JACKSONVILLE, FLORIDA****PSC 45****ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING**

Item	Item Cost Annually	Item Cost Every 5 Years	Notes	
Sampling	\$	3,500	Labor, Field Supplies Analyze samples from two (2) locations plus one (1) QA	
Analysis/Water	\$	705	sample for TCL VOCs, TCL SVOCs, and TCL metals Analyze samples from four (4) locations plus one (1) QA	705
Analysis Soil	\$	1,175	sample for TCL VOCs, TCL SVOCs, and TCL metals	1175
Report	\$	1,200	Document sampling event and results	
Site Inspection	\$	1,000	To verify continued implementation of the LUCIP	
Site Review	\$	7,000		
TOTALS	\$	1,000	\$ 13,580	

NAVAL AIR STATION JACKSONVILLE

JACKSONVILLE, FLORIDA

PSC 45

ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING

Present Worth Analysis

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 6.5%	Present Worth
0	\$ 15,708		\$ 15,708	1.000	\$ 15,708
1		\$ 1,000	\$ 1,000	0.935	\$ 935
2		\$ 1,000	\$ 1,000	0.874	\$ 874
3		\$ 1,000	\$ 1,000	0.817	\$ 817
4		\$ 1,000	\$ 1,000	0.764	\$ 764
5		\$ 14,580	\$ 14,580	0.715	\$ 10,419
6		\$ 1,000	\$ 1,000	0.668	\$ 668
7		\$ 1,000	\$ 1,000	0.625	\$ 625
8		\$ 1,000	\$ 1,000	0.584	\$ 584
9		\$ 1,000	\$ 1,000	0.546	\$ 546
10		\$ 14,580	\$ 14,580	0.511	\$ 7,445
11		\$ 1,000	\$ 1,000	0.477	\$ 477
12		\$ 1,000	\$ 1,000	0.446	\$ 446
13		\$ 1,000	\$ 1,000	0.417	\$ 417
14		\$ 1,000	\$ 1,000	0.390	\$ 390
15		\$ 14,580	\$ 14,580	0.365	\$ 5,320
16		\$ 1,000	\$ 1,000	0.341	\$ 341
17		\$ 1,000	\$ 1,000	0.319	\$ 319
18		\$ 1,000	\$ 1,000	0.298	\$ 298
19		\$ 1,000	\$ 1,000	0.279	\$ 279
20		\$ 14,580	\$ 14,580	0.261	\$ 3,802
21		\$ 1,000	\$ 1,000	0.244	\$ 244
22		\$ 1,000	\$ 1,000	0.228	\$ 228
23		\$ 1,000	\$ 1,000	0.213	\$ 213
24		\$ 1,000	\$ 1,000	0.199	\$ 199
25		\$ 14,580	\$ 14,580	0.186	\$ 2,717
26		\$ 1,000	\$ 1,000	0.174	\$ 174
27		\$ 1,000	\$ 1,000	0.163	\$ 163
28		\$ 1,000	\$ 1,000	0.152	\$ 152
29		\$ 1,000	\$ 1,000	0.142	\$ 142
30		\$ 14,580	\$ 14,580	0.133	\$ 1,941
TOTAL PRESENT WORTH					\$ 57,651

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA
PSC 45

ALTERNATIVE 3: EXCAVATION AND OFF-SITE DISPOSAL

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
1 PROJECT PLANNING											
1.1 Prepare Remedial Action Plan	50 Hr.		\$100				\$	5,000		\$	5,000
2 MOBILIZATION/DEMOBILIZATION											
2.1 Equipment Mobilization/Demobilization	1 Ea.		\$7,200	\$3,600			\$7,200	\$3,600	\$	10,800	
3 DECONTAMINATION											
3.1 Equipment Decon Area Setup/Dismantle	1 Ea.		\$2,000	\$1,000			\$2,000	\$1,000	\$	3,000	
3.2 Decontamination Water	2000 Gallon		\$0.20		\$105		\$ 400		\$	400	
3.2 Disposal of Decontamination Wastes	5 Day							\$105		\$	525
3.4 PPE	1 L.S.		\$1,000				\$ 1,000			\$	1,000
4 EXCAVATE CONTAMINATED SOIL											
4.1 Remove grass	51 S.Y.		\$32				\$ 1,632			\$	1,632
4.2 Hand-dig soil	70 C.Y.		\$115				\$ 8,050			\$	8,050
4.3 Post Excavation Soil Analysis	5 Ea.		\$250				\$ 1,250			\$	1,250
5 DISPOSAL											
5.1 Waste Characterization Testing	5 Ea.		\$250				\$ 1,250			\$	1,250
5.2 Transport and Off-Site Disposal	95 Ton		\$525				\$ 49,875			\$	49,875
6 SITE RESTORATION											
6.1 Import, Place & Compact Back Fill Materials	88 C.Y.		\$45				\$ 3,960			\$	3,960
6.2 Form, Pour and Finish 6" Tk. Conc. Slab	10 C.Y.		\$400				\$ 4,000			\$	4,000
7 MISCELLANEOUS											
7.1 Construction Oversite	7 Day		\$400				\$ 2,800			\$	2,800
7.2 Post-Construction Documents	40 Hr.		\$100				\$ 4,000			\$	4,000
Subtotal							\$ 71,417	\$ 21,105	\$ 4,600	\$ 97,542	
Overhead on Labor Cost @100%							\$ 21,105			\$ 21,105	
G & A on Labor Cost @ 10%							\$ 2,111			\$ 2,111	
G & A on Material Cost at 10%							\$ 7,142			\$ 7,142	
G & A on C=Subcontractor Cost @ 10%							\$ -			\$ -	
Total Direct Costs							\$ 78,559	\$ 44,321	\$ 4,600	\$ 127,899	
Profit on Total Direct Cost @ 10%							\$ 2,478			\$ 2,478	
Subtotal										\$ 130,377	
Health and Safety Monitoring @ 0%							\$ -			\$ -	
Contingency on Subtotal Cost@ 0%							\$ -			\$ -	
Engineering on Subtotal Cost @ 0%							\$ -			\$ -	
TOTAL COST										\$ 130,377	